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# Ship Board Now on Fresh Tack

**Chairman Payne Favors Private Ownership But Will Not Push Vessel Sales—Outlook Brightens as Government Officials, Bankers and Operators Study Problem**

**M**EMBERSHIP in the shipping board has grown to afflict a species of nervous agitation upon the unfortunate patients. In other words, they are always on the move. No more fluid agency of the government has ever been discovered. Shipping board members or commissioners come and go with bewildering frequency. A reorganized board is no sooner formed than one or more of its members have their resignations accepted and the marine fraternity must begin anew its analysis of still another board's capacity for good or evil.

Chairman Payne, himself a new member, beginning business a few weeks ago with a 60 per cent untrained membership, has now lost one of the newest members, Mr. Robinson. The latter's successor undoubtedly will come from the Pacific coast. The constantly shifting membership, it will be observed, has taken place without bringing the appointment to the board of any one representative of Great Lakes shipping, where a big and prosperous merchant marine was developed in the lean years before the war.

## *Chairman Payne's Policies Are Revealed*

New light is being thrown upon the probable policies of the new shipping board chairman. In the first days of his appointment, shipping people generally were unfamiliar not only with his attitude toward vital marine problems, but were unacquainted with Mr. Payne himself. After allowing for the natural regret over the failure to name a practical ship operator or ship builder—a regret which has been made chronic—a willingness existed to give Mr. Payne a fair field and withhold judgment until after he had had time to develop his policies.

In the few weeks which Chairman Payne has held office, the impression he has created has been favorable. This impression will undoubtedly be strengthened by the more intimate survey of his plans and policies unearthed by THE MARINE REVIEW and presented on page 465.

Mr. Payne follows the path of his predecessor in

favoring private ownership. He is said, however, to hold the conviction that the American investing public is not sufficiently educated to the value of marine securities to absorb, at this time, the huge fleet built and being constructed for the government. He favors salvaging for the government as much of the money invested in ship enterprises during the war as it is possible to. These two convictions are said to explain his attitude in cutting down the ship-selling organization developed by Mr. Hurley, fearing that energetic sales methods would lower ship prices and preferring to await gradual absorption of the fleet at a higher figure by an awakened buying public.

Like many other newly appointed government officials, Mr. Payne is trying to employ real business methods. Following this line, he has lopped off a number of positions regarded as useless, the total annual saving from this policy of economy being set at \$7,000,000. General approval will greet such a saving and will support him in his far more important task of correcting present methods of the accounting staff which are said to have prevented payment to the government during recent months of sums of money which now total \$1,500,000,000.

## *Washington Developments Are Encouraging*

Hopeful signs of an attempt to evolve certain major marine policies for the United States are beginning to originate in Washington. The board's action in appointing a committee of bankers to analyze the ship market and suggest a feasible plan whereby the disposal of the new American vessels to private interests can be financed, is strongly approved. Other committees are studying problems of marine insurance and navigation laws.

The riper maturity of Mr. Payne's policies will be followed with more optimism than has been accorded marine developments in Washington for some months past. At the same time congress should not be permitted to adjourn without definitely placing legal sanction upon a merchant marine policy.

# World Charter Market Reviewed by

## OUTLOOK GOOD

**Expert states That Conditions Favor the United States Becoming World's Dominant Shipping Power**

**P**RACTICALLY 50 per cent of America's exports are being carried today in American bottoms. During 1914, foreign vessels carried 91.8 per cent of our exports and transported 85.4 per cent in 1917. These figures illustrate the stupendous growth of the American merchant marine. According to the recent report of Lloyd's, United States shipping has increased 382 per cent in five years whereas the tonnage of England decreased 13 per cent. Japanese shipping increased 38 per cent. The importance of America on the seas is growing daily. No better authority for this is needed than W. R. Grace, the noted expert in foreign trade. When returning recently from Europe Mr. Grace said:

"No one here realizes the seriousness of the situation in shipping abroad. In England they have not even begun to approach a normal condition. With the labor unrest a most serious question in England, France and Italy, I see no chance for any immediate change for the better, particularly in shipping. Tonnage cannot be bought or chartered abroad, and in England the government still controls the movement of all its own shipping. To me it looks as if the United States might well become the dominant power in the shipping situation of the world."

The British government requisitioned an additional 15 per cent of space on all British transatlantic ships for carrying foodstuffs beginning with the first of September. Now the government control 50 per cent of this space. This throws in the hands of the private American operator a greater opportunity to engage in ocean transportation. But not only is the American ship operator gaining the upper hand, but the decline in European exchange is discriminating against British and other foreign marine insurance companies, and there has recently been an increased demand in the market for American policies. Shippers are not only refusing to accept foreign insurance unless it is made payable in dollars, but are canceling insurance already in force where the contracts stipulate sterling or other foreign money.

### Shipyard Outlook Bright

The situation prevailing today likewise favors American shipbuilding. While it is true that a lower selling price on American-built ships is to be quoted in the near future, this will undoubtedly result in considerable good. Joseph W. Isherwood, the inventor of longitudinal framing, is author of this statement regarding the situation in England: "Few builders will make an out and out contract. Prices in England are somewhat lower at present than they are in the United States, but there is, unfortunately, an upward tendency in England,

while in the United States the tendency is for a downward price in shipbuilding. The United States will probably give England a hard tussle for supremacy in shipping in the near future."

The crux of the troop movement has passed and but little tonnage will be required by the government for this service hereafter. Approximately 3,200,000 tons of ships have been returned to their owners, and about 400,000 tons will be redelivered during September. The government, it is expected, will allocate through the shipping board, most of the German vessels captured in our ports, and they will be operated by private American companies. The *IMPERATOR* goes to England. Four of the transports, however, will be retained in the New York-Brest service to transport mail and to facilitate the return of first-class personnel. They are the *GEORGE WASHINGTON*, *LEVIATHAN*, *AGAMEMNON* and *AMERICA*. The shipping board has announced that the South American passenger service will be started with vessels smaller than those designated earlier. The first ship to be used will be the *MOCCASIN*, formerly the German liner *PRINCE JOACHIM*. She measures 8000 tons deadweight and is capable of making 12 knots when loaded. She is considered a first-class vessel.

### More Lines Expand

With more tonnage at their disposal the American lines are spreading out, planning to engage in new services. Eight American lines have planned services to Germany, touching at Hamburg and Bremen. These are the International Mercantile Marine, Barber Steamship Co., American-Hawaiian, Moore & McCormick, Brooks Steamship Corp., Kerr Steamship Co., Gans Steamship line, and the Pacat Steamship Corp. These lines have already sent some ships to Germany. The first return cargo to be brought from Germany reached New York on Aug. 23, consisting of 181 packages of glassware. Tonnage

to be had in Germany for the return voyage, however, is proving extremely disappointing. The decline in the mark will undoubtedly react as an encouragement toward making purchases in Germany, but the fact that the dollar sells at a premium mitigates against American shippers making sales there. The steamship companies have

### Plan New Lines

**T**HE time charter market on the Pacific coast, according to recent advices, is weak when compared to the Atlantic market. While shipping men of the Pacific coast have been interested in the purchase of a number of government vessels, there is a general disposition to proceed cautiously, until the government adopts a definite merchant marine policy.

At San Francisco, a movement is under way to form a popular shipping company for the purchase and operation of a fleet of vessels. Seattle capital is also reported to be on the lookout for ships and several companies are under organization.

# Experts in This Country and Abroad

been able to book only small quantities of miscellaneous package goods and a few lots of foodstuffs for Germany.

Passenger traffic conditions have been extremely bad. There has been a great demand for bookings, a demand which the steamship lines have been unable to meet, and in addition the labor troubles have materially delayed sailings. This will be relieved only in part with the release of requisitioned tonnage. The French government has returned LA FRANCE and that vessel sailed during August for New York on its first commercial trip since the war. There are today more passenger ships under the American flag than prior to the war, but these ships, being war prizes mainly, have added nothing to the world's tonnage. Great Britain has lost considerably in this type of vessel. She has come out of the war with but nine vessels measuring in excess of 20,000 tons. These are the ADRIATIC, AQUITANIA, BALTIC, BELGIC, CEDRIC, CELTIC, MAURETANIA, IMPERATOR and OLYMPIC. Under the Dutch flag is the ROTTERDAM, and under the French flag is the FRANCE and the PARIS. Under the Italian flag is the GUILIO CESARE, and under the American flag is the LEVIATHAN, AMERICA, GEORGE WASHINGTON, MINNESOTA and KAISERIN AUGUSTA VICTORIA.

## Raise Passenger Fares

The passenger situation has become so acute, due to strikes, labor demands and vessel shortage, that the conference lines increased their transatlantic fares. The first-class passage now costs \$15 more, the second class \$10 and the third class \$5 more.

The new rates are between 50 and 60 per cent higher than the prewar passenger fares. The steamship lines insisted that this advance was necessary due to the larger cost of operating. Charters are scarce although some business has been done on trips. As a general thing American charters have been quoted at \$9.50 on the time rate,

## Lowers Freight Rates

TO encourage shipping between this country and South America, the shipping board recently inaugurated a sharp cut in rates from River Plate to United States ports. The new schedule of commodity rates makes the charges per gross ton as follows:

Wet hides, \$35; wool and hair, \$30; quebracho cased, \$35; quebracho sacked, \$30; cheese, \$45; tallow, \$45; casein, \$40; pickled skins, \$50; case meats, \$40; fertilizers, \$30; minerals, \$30.

Marked improvement in labor conditions at the terminal ports, according to the shipping board, has allowed the reductions because vessels are now enabled to shorten the time spent in port.

## MORE LINES

Being Organized to Carry American Commerce in New Trade Lanes—Pacific Conditions are Unsettled.

toward lower freights such a movement is not expected in shipping circles. The tonnage in command today is much greater than it was last spring, but the cargoes offered are more plentiful. Shipments are moving in such an unbalanced way that it is impossible to get full use of a vessel. Expensive delays have been encountered at the French ports and many ships have been compelled to return without cargo.

New lines trying to get into the business are the cause of a disturbing situation. One of these startled the market recently by quoting low rates to River Plate expecting to inaugurate a line of vessels early in October. Another large exporter spoke of being given a low quotation to Scandinavia. This situation causes no little apprehension to the established operators.

Little competition has manifested itself over the grain traffic. This is due largely to the fact that England and Europe generally is still on a war basis. The British government itself is attending to the transportation of grain from the Northern Range although some little business has been done on private account. The Italian and French governments have also engaged in this business of transporting grain because of the food restrictions in those countries. Shipping men are inclined to believe that this situation will continue even longer than this year's crop because they do not expect the food emergency in Europe to pass soon. The English have decided that Canadian grain must go via the St. Lawrence and therefore little, if any, will be exported this year through United States ports. American grain is being rushed to the lower lake ports and the railroads are being pushed to keep the elevators there free to receive the new crop.

## Coal Trade Full of Promise

Coal is being shipped to European destinations in fair quantities. It is being carried even to the Scandinavian countries. The development of the foreign coal trade promises much for both the industry and for American ship operators. Approximately 2,000,000 bales of cotton will

be exported through the Texas ports this year, according to present indications, and this probably will not be 20 per cent of the cotton business. Lumber freights, except to New York and Philadelphia and South Africa loading, have taken an upward trend. Coastwise freights advanced 50 cents a thousand from all ports to California.

Philadelphia is being served by 15 new ship lines. The American Steamship Navigation Co. will operate a freight service to Marseilles and Barcelona. The port of Philadelphia expects to handle over 50,000,000

tons of trade annually. Since the armistice some of the lines, which have begun to serve or announced their intention of serving Philadelphia, are the Royal Lloyd Belge, Cunard, France-Canada Steamship Corp., Brooks Steamship Corp., International Freighting Corp., Swedish Transatlantic, Charles T. Megee Co., International Mercantile Marine, and the Norway-Mexico Gulf line.

### Purchases English Steamers

P. Kleppe & Co., Inc. will operate the North & South Atlantic line, sending ships from New York to River Plate. The line begins with some ships chartered from the American-Hawaiian line. The line is purchasing three 10,000-ton steamers now building in England, the first of which will be put in operation in December. The American-Hawaiian line, it has been announced, does not at present intend to resume its transpacific services. Its steamers have been let out on charter, although there has been a report current that this line plans to let contracts for several large diesel-engined vessels. W. R. Grace & Co., however, have announced that the Atlantic & Pacific line will be reinaugurated. The Luckenbach line, which planned an extensive service to Australia, is also said to be thinking of chartering out its vessels at least until such time as the conditions on the Pacific become more settled. The vessels of the Pacific Mail will sail the Atlantic, as the line intends to re-establish a service between San Francisco and Baltimore via the Panama canal.

The Fidelity Steamship Co. has been financed by Boston business men and intends to acquire a fleet of six or eight oil-burning steamers to engage in foreign trade. Arthur L. Crowley, vice president of the Coastwise Transportation Co., heads the new line. The first ship, purchased from the shipping board, is the STRATHNAVER. According to gossip the new line intends to absorb the Triangle Steamship Co. Edward J. Dalton, who organized the Triangle, has been bought out of that company. This is interpreted as the first step in the combination of the shipping interests. The Swiss Union is a third line mentioned as being involved in the merger. If the Fidelity-Swiss-Union-Triangle combination is effected it would have immediate control of 50 vessels in various trades with an especially strong representation in the Scandinavian countries. The Interocean Navigation Co. has been incorporated at Wilmington, Del., and the Adolph Steamship Corp. has been chartered under the laws of New York.

### Oriental Rates Are Weak

Oriental rates from the Pacific coast are reported weak with a fair supply of tonnage for what cargo is moving. A scarcity of measurement cargo is available from Seattle for China and Japan and operators are having some difficulty in obtaining the correct proportion of cargo to stow their vessels properly. There is an increasing number of shipping board steamers in the transpacific trade now and less Japanese tramps than a year ago. The Japanese are sending tonnage to the Atlantic and to other trades where conditions are more attractive. Considerable interest attaches to the new schedule of the shipping board establishing commodity rates to the Orient. Heretofore, these rates have all been based on weight and measurement and the innovation is causing some temporary confusion. It has also tended to weaken rates which are none too firm at \$12 per

ton, weight, the measurement rate of \$14 being now practically out of use.

Cotton constitutes the greatest proportion of measurement cargo moving through Seattle. However, none of this staple is now moving and it is believed that in the future the largest part of this movement will be from gulf ports direct to Japan, via Panama. Japanese lines are operating through steamers from New Orleans to the Orient and it is expected that considerable cargo that has heretofore gone by the combined rail and water route will now move entirely by water.

The lumber market is reported weak on the Pacific. Tonnage is somewhat easier than it was and although lumber freights to Australia and the West Coast have nominally advanced during the last month, the present situation is weak. Exporters are holding off, hoping for lower lumber prices and more reasonable freights.

### Lumber Movement is Good

Heavy shipments of lumber and ties from the Pacific coast to the Atlantic and Europe have been made during the last month and the movement will likely remain active for some time. There is a large amount of this material booked from British Columbia to Great Britain and it is to be taken by a fleet of new French steamers, as soon as they are completed. With the resumption of direct and regular steamship service between Puget sound and Hawaiian ports, this trade has increased and is approaching the volume it attained prior to the war. The Hawaiian islands are large consumers of Puget sound lumber and this commodity continues to move in large quantities. The rate on lumber from Seattle to the Hawaiians in cargo lots continues fairly firm at \$17 per thousand. Owners of coastwise vessels are obtaining profitable rates on lumber and all available tonnage is kept constantly employed. During the last month there has been an increase of \$1 per thousand in this trade, the present rates being \$8 to San Francisco and \$9.50 to southern California.

### Boston's Exports Increase

A heavy increase in exports, particularly over figures of a year ago, is noted at Boston which serves as the principal shipping point for New England and parts of the Middle West. This improvement in outward freights, gradual at first, now is jumping ahead wonderfully, the first week of August showing the largest totals in grain for many months. Much of this grain goes to Liverpool and London while Glasgow, Leith and Sharpness are coming into prominence as cereal markets. During August approximately 1,400,000 bushels of oats were exported as compared with 450,000 bushels for the corresponding period a year ago.

Barley is moving in large volume—1,300,000 bushels for the month—while the shipments for a similar period of 1918 aggregated but 40,000 bushels. Large quantities of lard and bacon were sent abroad last month, figures for the former commodity being 9,000,000 pounds against 1,000,000 pounds for the corresponding month last year. There were exported 50,000 boxes of bacon compared with 1200 for the corresponding period of last year, while the amount of leather, 3000 tons, was nearly three times as large as last year. Few apples are being shipped and the movement of eggs and butter is almost at a standstill.

# Plan New Ship Salving Machines

Art of Making Recoveries Under Sea Greatly Advanced During Past Four Years — All Allied Countries Involved in Task

BY V. G. IDEN

ENGLAND, France and Italy have shown an active interest in the work of salving the vast amount of tonnage sunk during the war. Germans are also reputed to have ambitions in this direction. During the war our own government undertook some developments along this line but since the cessation of hostilities our salving has been handed back to private interests. Something between a five hundred thousand and a billion dollars worth of ships have been sunk off our coasts. Furthermore a number of American vessels have been sunk in European waters. Although some of our vessels were sunk in foreign waters, the United States has refused to relinquish claim to their ownership and the salvage work attempted on them will undoubtedly be in the interest of American owners.

National claim to vessels sunk during the war, no matter what their locality, is being advanced by all the maritime nations. The old contention that a nation could claim own-

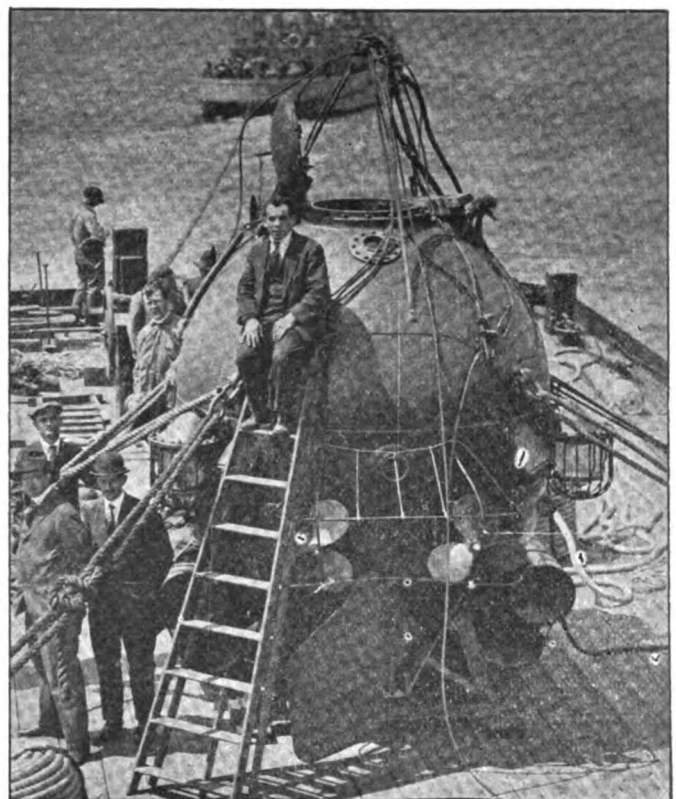
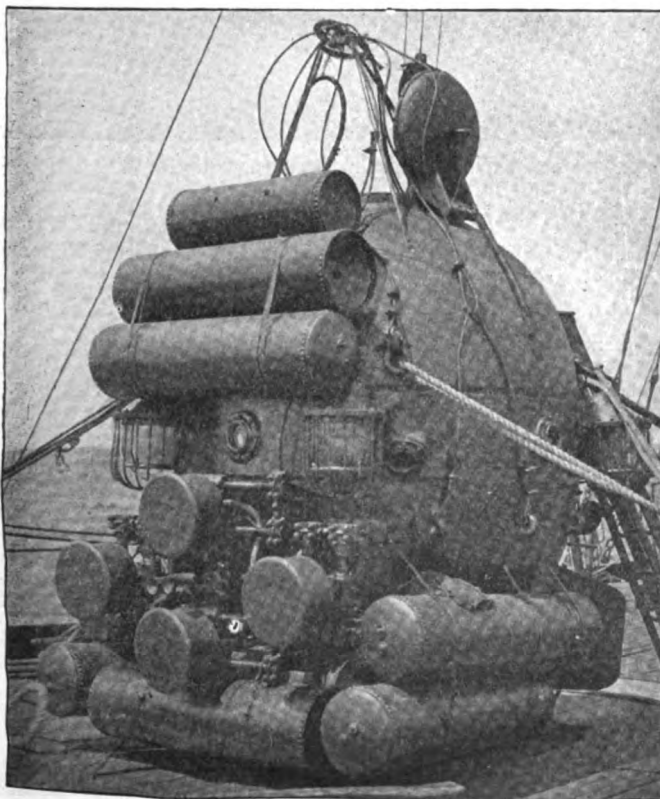
ership of nothing sunk outside the 3-mile limit, is being exploded. If the new basis of ownership is adhered to, it is doubtful whether the Germans will ever be permitted to carry out their reputed intention of reclaiming much of the merchant tonnage which their own submarines and mines sunk during the war.

## Must Work at Great Depth

At the same time the salving of vessels today presents more than the ordinary problems of recovery with which we have had to contend heretofore. Vessels representing great wealth have been sunk in the ocean at depths much beyond anything divers have worked before. It is claimed that divers cannot work successfully at a depth greater than 80 feet because the water pressure is too great. Working at depths within this range presents considerable hardship, since it is necessary for the diver to breathe compressed air. But while breathing the oxygen in the compressed air, nitrogen is taken into

the blood in the form of gas. Should a diver come suddenly into a normal atmosphere with all this nitrogen gas in his blood, it will effervesce, breaking the capillaries, causing pain and often death. Inventors have therefore turned their attention to the problem of protecting the diver from the water pressure, thereby making his work easier and permitting him to go down to depths greater than 80 feet. Deep sea armor is one of the schemes which has been advanced.

The Atlanta Engineering Corp., of New York, proposes to build one style of deep-sea armor. A suit was constructed and tested but some alterations are to be made. The first suit was of cast steel from the waist to the feet with a large cylinder tank encompassing the hips in which it was proposed to carry air bottles. The suit from the waist up was constructed of an aluminum composition. It has been decided that the large cylinder around the waist made the armor cumbersome and in the



FRONT AND REAR VIEWS OF SISSON DEEP SEA DIVING MACHINE SHOWING MAGNETS, PROPELLERS, DRILL, ETC.



next suit this feature will be eliminated and the trousers made of gun metal. The whole will be built upon the ball and socket principle so as to give freedom to all the limbs of the diver.

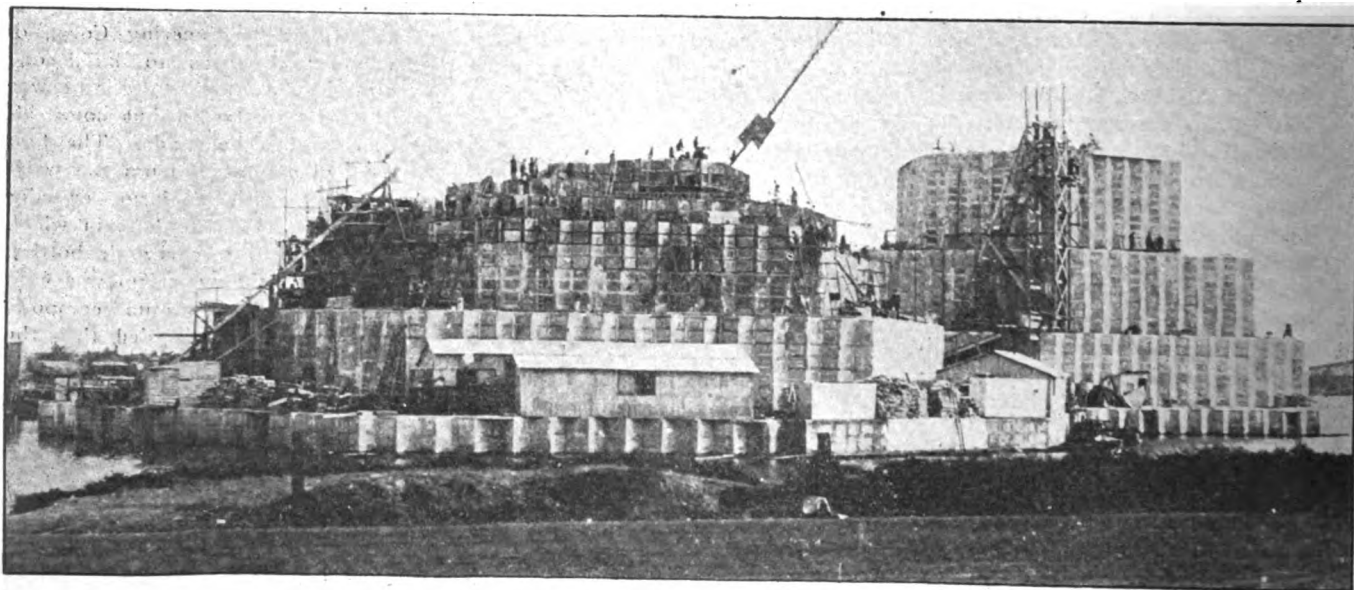
The inventors had hoped to test out their deep-sea armor in the raising of the revenue cutter, MOHAWK, which was sunk in the harbor of New York. She is resting about 90 feet below the surface of the water. The water pressure at the depth at which the MOHAWK is laying is 38.9 pounds per square inch. Ordinary diving suits could not be used against such a pressure. Normally it has been impossible for a diver to work at a depth any greater than 80 feet, and then only very inefficiently.

The American Salvage Co., New York, has attempted to eliminate the

side of a steel vessel, by energizing and de-energizing the magnets, and using them in conjunction with the screws. A drill and thrust arm are operated from within the machine, 6-inch lenses, 3 inches in thickness, are placed at intervals to permit of observation. A flexible armored cable carries two conductors from the tender ship to the machine, supplying the necessary current to the various motors within the machine. This cable has a buoy attached to it 25 to 30 feet from machine permitting the rest of the cable to hang slack so that the machine may be moved at will in the water. A telephone wire is carried within the cable permitting the operators to be in constant communication with the tender ship. Steel air bottles under high pressure carry enough air for the operat-

panding hook. These hooks are banded together so that they will face outward or forward. The machine is about neutral in the water, and determines its position by means of the lower propellers; the rear propellers move it forward and the magnetic thrust arm picks up one of the hooks attached to the pontoon. The four electro magnets are then energized and the drill drills a hole and by releasing the two vertical magnets the machine moves over until the hook is directly opposite the hole that has been drilled, the magnetic thrust arm then moves forward and inserts the expansion hook in the hole. This operation is repeated until a sufficient number of pontoons have been attached to the ship to raise it.

The water in the pontoons is displaced by pumping air through a



A COMBINATION PONTOON AND FLOATING DRYDOCK IS BEING TRIED BY THE BRITISH ADMIRALTY FOR SALVING SHIPS

danger of diving by proposing to use a device constructed upon the submarine principle. This is shaped like a ball and the men sent to work on the sunken vessel will work from its interior. It is known as the Sisson deep-sea diving machine, and has been tested in the waters of Lond Island sound. The machine is 7 feet in diameter and 9½ feet in height. The machine weighs about 10 tons and is equipped with four 300-candlepower nitrogen lamps, two propellers on the rear and two on the bottom, permitting the operators to navigate the machine while searching for wrecks. On the front of the machine are located four electro magnets with a pulling power of about 2½ tons each. These magnets are operated in pairs by a motor within the machine which permits of the machine being moved to a predetermined point along the

ors and while submerged they work under normal atmospheric conditions, irrespective of depth, due to the fact that air is permitted to enter the machine from steel air bottles at a predetermined rate per minute. While an air pump independently operated expels the foul air, in this manner maintaining normal atmospheric conditions. In case of emergency, the machine is equipped with ballast tanks which can be exhausted, thus permitting the machine to come to the surface of its own buoyancy. A manually operated pump is also provided for use in pumping out the ballast tanks.

The plan of operation is more or less as follows: Pontoons of a predetermined size are lowered alongside the wreck. They are equipped with cables placed about 2 feet apart; each cable has a float, also an ex-

hose into the pontoons, the water going out through a spring check valve.

An improved type of machine is now being designed which will not have the different projections that the present type has. The lights, propellers and magnets will be concealed which will lighten it considerably and the operating mechanism such as drill and thrust arm will also be changed. The machine was not designed to work in tide races, rivers or bays where visibility is lacking.

During the war the navy department made use of the hydraulic method of passing chains under a vessel with some measure of success. A high-power hose was used on a vessel which was not extremely deep. The water pressure at that depth was 23 pounds and the hose threw water under a pressure of 150 pounds.

The diver directed the nozzle, which was extremely long, at the sediment under the vessel and when a passage had been blown completely through, the nozzle was disconnected and a cable drawn under. Chains were attached to the end of the cables, and these were later attached to specially constructed pontoons.

In cases where the ship has settled deep into the sand and mud at the bottom of the ocean it would be impossible to dig under it with either a hose or any other method now in use because as fast as the sand was removed it would fill in again. To meet such a condition as this, the burrowing machine has been invented and is being promoted by the

has a hydraulic spray attachment which will assist the progress of the "caterpillar" by blowing away sediment. This machine also is operated by hydraulic power and draws chains under the ship.

The Interocean Submarine Engineering Co. hopes to obviate the necessity of using pontoons in deep-sea work by utilizing the water-tight compartments of the sunken vessel. Where this practice is followed it will be necessary to send divers down to seal all the hatches and holes. In the shell of the water-tight compartments a hole will be cut over which is fitted in patented valve plate. Through this valve compressed air can be pumped into the compartment and the water forced out.

This scheme was used in a modified way to raise the American submarine F-4, in Hawaii, a few years ago. Considerable study has been given to the effect of the water-tight compartments on a sinking vessel. It has been discovered that some of these vessels will float below the surface of the water for a long time, or at least until water gets into the compartments and forces all the air out. Then the vessel turns turtle and sinks to the bottom. It is believed that by sealing the hatches and filling these compartments with compressed air again, the vessel will revert to her upright position while coming back to the surface.

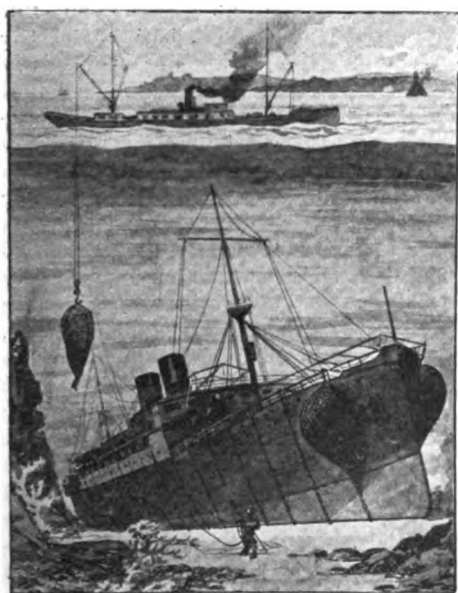
In harbors it is possible to use pontoons and other simpler means of raising a ship, but it becomes increasingly difficult to use pontoons in the ocean. The large pontoons the English have built, however, may be considered somewhat different. These, constructed of cement, are in reality the half sections of a dry dock. It is planned to lower one on either side of a ship, pump the water out and bring her to the surface.

But after diving for a ship, it is often found necessary to cut away some of the structure in order to get to work on the vessel. Sometimes it has been found utterly impossible to do anything with a sunken ship because it was impossible to cut away certain structures. Merritt & Chapman, of New York, believe they have largely met this problem by the use of an underwater cutting machine. This machine is an adaption of the acetylene cutting flame. It has been patented in this country.

In the Chapman system of underwater cutting the flame is supported by a constant electric arc. The Germans also have a method where the flame is supported by compressed air and a shield. The flame, however,

is started by an electrical spark. The English likewise have a machine to cut underwater but theirs is an electrical method entirely.

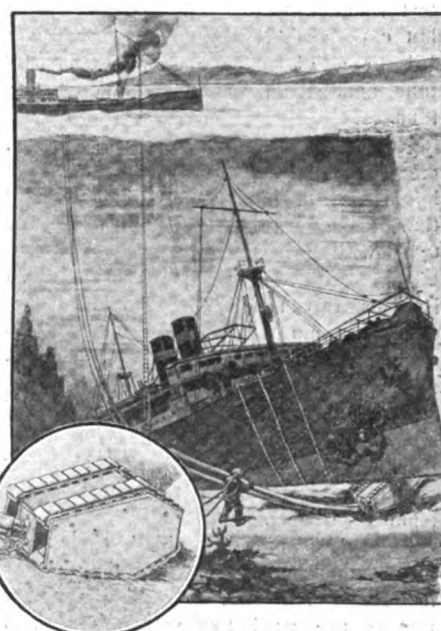
Salvaging work is still progressing along the accepted lines, while inventive genius has been exhausted upon the many ideas advanced for raising the numerous vessels that were torpedoed and mined in the ocean. But daring attempts to raise vessels from the bottom of the ocean will probably not have the sanction and the support of the commercial salvagers for some time to come. They hesitate to work on experiments because such work does not hold profit for them. It is too much of a gamble. Commercial salvaging must be assured of



COLLAPSIBLE PONTOONS MAY BE USED TO RAISE SHIPS

United States Ship Salvage Participating Syndicate of New York. This is a box-like machine which is pulled through the sediment and under the ship by two screw-like blades operating in opposite directions. The blades are operated by an engine supplied with water under pressure. It has a rudder on the rear end which will guide the machine up or down as is needed and attached to this is a cable which is pulled under the ship as the machine burrows. Once through the hose is disconnected and the machine lifted out of the water from the other side of the ship by a derrick.

A further adaptation of this burrowing principle has been devised by the same people by an application of the tank which was invented during the war. Instead of two traveling belts, however, this machine has four, two working together in opposite directions. The nose of this machine



SKETCH SHOWING HOW BURROWING MACHINE WORKS

a reasonable return upon its expenditures.

Since the war salvage experts have been striving to find a way to do away with diving. If this can be accomplished a great advance will have been made in the art of salvaging. One of the ideas advanced is known as the DeVito method. Instead of having several pontoons, but two pontoons are used hinged together at each end. These hinges are operated in connection with an air-cylinder. When lowered the hinges are wide open and the pontoons will lay on either side of the sunken vessel. Air is then pumped into the cylinder which raises, closing the hinge and bringing the two pontoons close together, clamping them to the ship in a vise-like grip. The grip of the pontoons once established, water is pumped out of the pontoons thereby raising the ship.

# Winches Operate by Electricity

Harbor Lighter is Equipped With Electric Cargo Handling Gear Operated From Pilot House—Ready Control is Obtained

**P**ENNSYLVANIA railroad lighter No. 151 is the first vessel of her type to be equipped with electrically operated winches exclusively. She is used for carrying express shipments around New York harbor, a service in which time is an important factor. Her winches were arranged for electric drive in the belief that this would reduce the time required for handling cargoes. She has now been in commission about two years. It is difficult to carry out an accurate efficiency test in handling miscellaneous packages, but experience is said to show that No. 151 in a given time will handle 300 tons against an average of about 200 tons.

No. 151 has two systems of booms, one forward consisting of a single main boom with a maximum capacity of 10 tons, and one aft, of the mast and yard type, with a maximum capacity of two tons. With electrical operation, two systems can readily be employed because the motor-driven winches are so compact that they can be housed in a small compartment. This compartment is situated in the hull just forward of the pilot house. All the lines run down in front of the pilot house to their respective winches in the most direct manner possible.

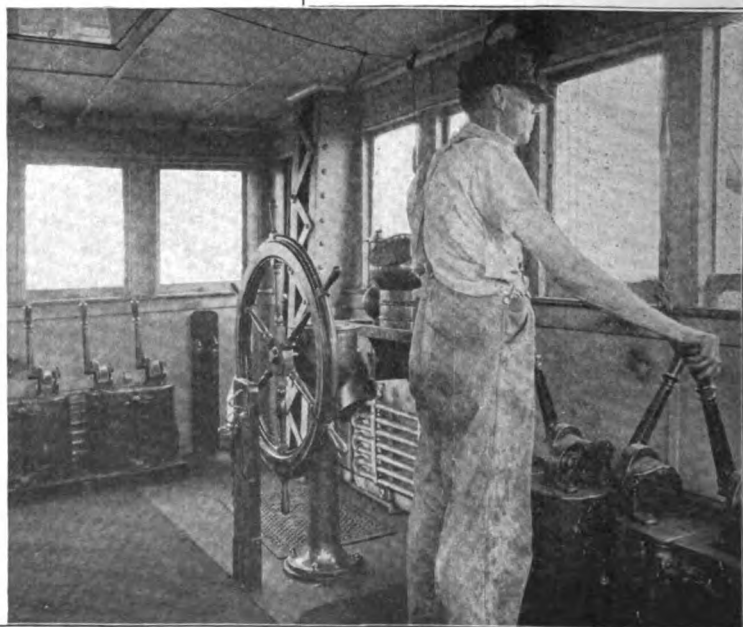
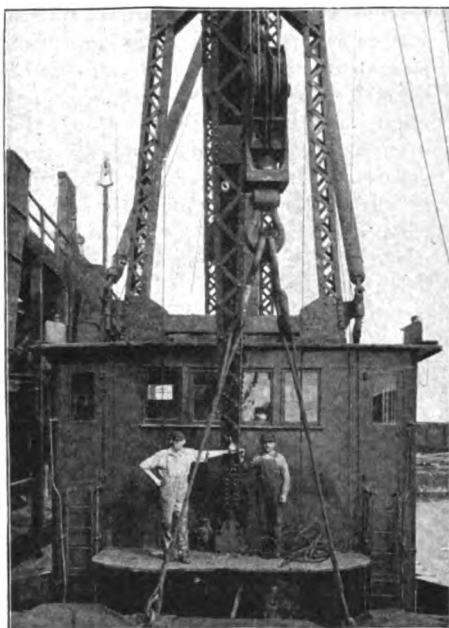
Eight booms are provided, their purposes and sizes being as follows: For the forward booms, two 24-horsepower motors are used to operate the main

hoist and main boom respectively, while motors of 15 horsepower each are used in connection with the starboard and port guys. For the after booms, the starboard hoist, starboard guy, port hoist and port guy are operated each by a 15-horsepower motor.

These motors are of the Westinghouse direct-current crane type, totally enclosed and equipped with magnetic brakes. Each motor is geared directly to its winch and the winches are arranged in two rows, one above the

other. The control of the winches is located in the pilot house. The four controllers, one for each motor, for the forward boom are located at the forward end of the pilot house. For the aft booms, there are two sets of controllers, one located at each side of the pilot house, either of which can be used. The object of this arrangement is to give the operator an unobstructed view of the operations of the booms under all conditions.

The controllers are of the type known as "master switches." They do not control motors directly, but control the operation of a series of magnetically actuated switches, which make the actual connections. These switches are mounted on panels located in the motor compartment. Advantages claimed for this arrangement are that the master switches handle only the small currents needed to energize the magnets and so are light in construction and easily handled; the heavy cables carrying the motor currents are of minimum length, and do not have to be run up to the pilot house and down again; the magnet switches permit the use of automatic acceleration, that is, the operator is not obliged to operate the master switches slowly in order to prevent burning out the motors by applying the currents too suddenly. He merely moves the handles at any speed he pleases, and the magnet switches then close in the proper order and at the proper rate. The motors



AT THE LEFT IS SHOWN THE PENNSYLVANIA HARBOR LIGHTER NO. 151 WHILE THE VIEW AT THE RIGHT SHOWS THE HANDLING GEAR IN THE PILOT HOUSE—THE UPPER ILLUSTRATION IS LOOKING AFT FROM THE FORWARD DECK



are thus protected from injury, and all of their operations are carried out at the maximum speed consistent with safety. Each controller provides a number of motor speeds.

The current for operating the motors is generated by a 25-kilowatt, 125-volt, Westinghouse turbine-generator. This

unit consists of a high speed turbine geared to a standard generator. It is operated by steam at pressures of from 75 to 250 pounds, and can be used either condensing or noncondensing. A governor keeps the speed, and therefore the voltage, constant, and an emergency stop prevents accidents due to over-

speeding. This outfit is only about 3 feet wide, 3 feet high, and 5½ feet long, so that it can easily be installed in a corner of the engine room.

The crew of the No. 151 consists of a captain, chief engineer, fireman and four deck hands. The winches are operated by the chief engineer.

## French Ship Bureau Changes Rules

**B**UREAU Veritas, the French classification society, has decided to revise its specifications covering manufacture of various steel and iron products used in ship construction. According to officials of the society this step has become necessary, owing to the fact that many American steel manufacturers have been adverse to accepting orders when its specifications were used. The new specifications will conform to the more general practices of American manufacturers and American shipbuilders.

A revision of the specifications has been impossible prior to this time due to the unusual conditions during the war. The new rules are scheduled to be issued about the first of the coming year. Pending issuance of these revisions, Bureau Veritas has issued formal notification that any orders for ship structural steel, boiler steel (including plates, tubes, stays and rivets), castings, forgings, etc., received specifying Bureau Veritas tests, inspection or specifications, are acceptable to them, when fabricated in accordance with the various specifications of the American Society for Testing Materials as set forth in its standards of 1918, provided, of course, that such tests are performed in the presence of a duly authorized representative of the Bureau Veritas.

### Govern United States and Canada

The revisions are intended to cover any materials manufactured in the United States or Canada either for export or local consumption. Specifications of the American Society for Testing Materials have been decided upon by the Bureau Veritas as being quite satisfactory and are believed to be most readily adaptable and agreeable to American practice and are so widely known that the mills can work to them without requesting special instructions.

In many cases, especially with boiler material (plates, stays and rivets), it will be found the order designates the physical properties. In such an instance the order must be conformed to with the balance of in-

spection in accordance with testing society specifications applying. Should designated physical requirements vary from the society's specifications, the analysis may be altered, with its permission, to come within the range of its physical property requirements.

The specifications so acknowledged at this time are as follows, class to be specified class B medium:

Structural steel for ships, A 12-16.

Steel ship rivet bars and rivets, A 13-14.

Steel forgings, A 18-18.

Steel castings, A 27-16.

Stay bolt iron, A 39-18.

Steel boiler plate, A 30-18.

Steel boiler rivet bars and rivets, A 31-14.

Steel lap-welded and seamless boiler tubes, A 52-18 as modified hereinafter.

Steel boiler stays to be in accordance with order as to physical properties and tested as follows:

For material over 1¾-inch diameter, two tensile tests from each charge but when the number of bars as rolled from one charge exceeds 15, an additional test shall be made for each further lot of 15 bars or portion thereof. One cold and one quench bend test shall be made from each charge provided said charge does not exceed 15 bars as rolled. In this case an additional test will be required for each lot of 15 bars or fraction thereof.

For material 1¾-inch diameter and under, the required tests will be the same with the exception that the number of bars in each case shall be changed to read 50 instead of 15.

Exception is made to the American Society for Testing Materials A 52-18 as covering boiler tubes in that the following modification to clause B, paragraph 12, section 5, shall be effective:

All tubes shall be gaged with a Birmingham wire gage and shall not be less than the thickness specified except that tubes will be accepted on which the gage will go on tightly at the thinnest point, nor shall the thickness at any point exceed that specified by more than three gages. Furthermore, the weight shall not

exceed by more than 15 per cent the theoretical weight of the minimum gage specified.

### Offers Three Courses

The Brooklyn Polytechnic institute, Brooklyn, N. Y., will conduct courses in marine engineering, shipbuilding and yacht design starting late in September under the direction of Ray B. Whitman. The marine engineering course is divided into 30 lectures and recitations while the ship drafting and yacht design courses comprise 30 drawing room classes and recitations, respectively.

The object of the first two courses is to give the students such a comprehensive training that when they enter a shipyard or drafting room they will understand what is wanted of them.

The course on yacht design is laid out to impart technical knowledge of this branch of naval architecture. It will enable students to design and draw a complete sail or power boat of their own choosing under skilled guidance.

### Firms Consolidate

The Chester Shipbuilding Co., Ltd., Chester, Pa., recently was merged with the Merchant Shipbuilding Corp., New York. For some time past, the Merchant corporation has been the only stockholder of the Chester company and the directors and executive officers of the two companies have been the same. Thus no changes in management or control result from the merger.

The Merchant Shipbuilding Corp. yard at Bristol, Pa., is operated under the United States shipping board. For this reason its operation will be kept separate from the yard at Chester, Pa.

The Warrior River Development Co. has organized the Port of Birmingham County, Birmingham, Ala., with a capitalization of \$600,000. The company plans to build derricks, wharves and side tracks at Short Creek. The derricks will have a capacity of 25 tons, equipped with 100-foot booms. The tonnage handled will consist of iron ore, nitrate of soda, pyrites and other ores. The engineering work is under the supervision of Charles F. Wood.

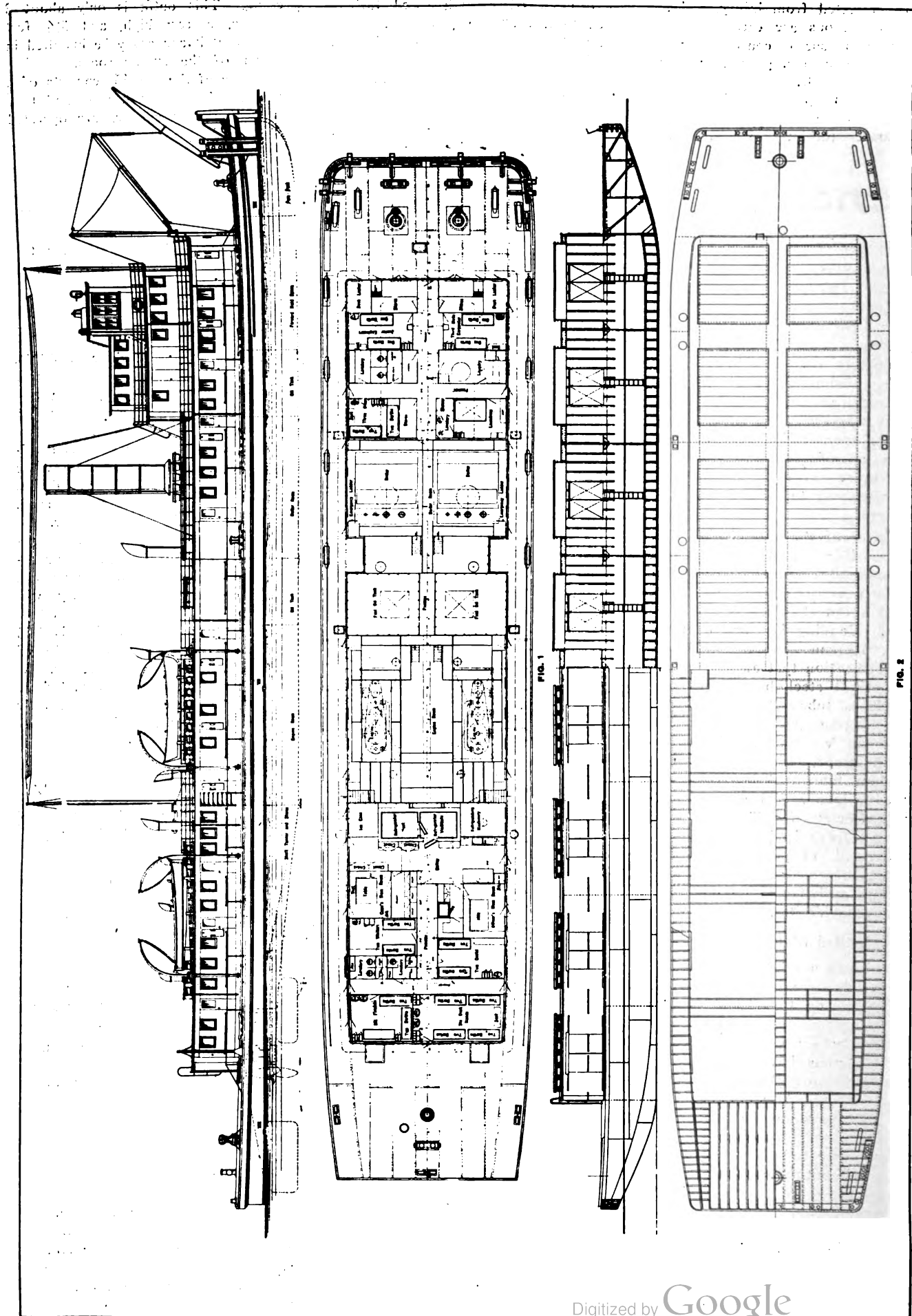


FIG. 1 AND 2—THE UPPER ILLUSTRATION IS A TWIN SCREW TUNNEL-STERN STEEL TOWBOAT WHILE THE LOWER VIEW IS A STEEL BARGE, BOTH DESIGNED FOR USE ON THE MISSISSIPPI RIVER—THESE VESSELS ARE STEEL CONSTRUCTION THROUGHOUT

# Designs Modern Inland Barges

Architects After Study of Problems Met in This Field Have Evolved a Number of New Types of Barges and Towboats

**T**HE increased interest aroused during the past two years in inland waterways has brought about a deeper study of the types of vessels best adapted for such service. Attention has been given not only to barge building materials, including steel, wood and concrete, but to economical sizes, lines and propelling arrangements.

A fleet of 124 towboats and barges is now under construction for the railroad administration. These include various designs developed as a result of recent studies of waterway and commercial problems in different districts of the country. The vessels were designed by Cox & Stevens, New York. The list follows:

Fifty-one canal barges, 150 feet long, 20 feet beam, with a 12-foot depth for the New York barge canal are now under construction in four shipyards. The Dravo Contracting Co., Pittsburgh, is building 12, the Ferguson Iron & Steel Co., Buffalo, 16; Terry & Tench, New York, 20, and the Downing Marine Construction Co., Glen Cove, N. Y., 3.

Six tunnel-stern river towboats, 200 feet long, 40 feet beam with a 10-foot depth for the Mississippi river are being built in two yards. The Marietta Mfg. Co., Point Pleasant, W. Va., is constructing four of these vessels while two are on the ways at the yard of the Charles Ward Engineering Co., Charlestown, W. Va.

Forty canal and harbor steel barges, 230 feet long, 45 feet beam with a 11-foot depth for use on the lower Mississippi are now under construction in two yards. The American Bridge Co., Pittsburgh, is building 25 while the remaining 15 are taking shape at the yard of the Dravo Contracting Co., Pittsburgh.

Three tunnel stern river towboats, 140 feet long, 24 feet beam with an 8¾-foot depth for use on the Warrior river are under construction by the Howard Shipyard & Dry Dock Co., Jeffersonville, Ind.

Four self-propelled barges, 280 feet long, 49 feet beam with a 10-foot depth for use on the Tombigbee, Alabama and Black Warrior rivers, are being built by the St. Louis Boat & Engineering Co., St. Louis.

Twenty self-propelled cargo barges, 149 feet 6 inches long, 20 feet beam with a 12-foot depth, for use on the New York state barge canal are under construction in three yards.

Terry & Tench, New York, are building 12, the Dravo Contracting Co., Pittsburgh, four, and Starr & Bennett, Newbern, N. C., four.

The type of towboat for use on the Mississippi is shown in Fig. 1. These vessels are 200 feet long, 40 feet molded beam, 10 feet molded depth and will draw 6 feet of water. The design shows an all steel single deck vessel with a continuous deck

## To Revive River Traffic

*IN the early development days of the country, the waterways were the only means of transportation and even after the advent of railroads, the Mississippi continued to be the main north and south commercial artery. In those days of romance, when Mark Twain was a river pilot and races between boats of rival lines were everyday occurrences, the old timers boasted that it amounted to something to be a steamboat man.*

*River traffic after lying dormant for nearly 60 years is coming into its own again. While the old romance of the river, as described by Mark Twain in "Life on the Mississippi," has gone forever, the commercial value of the giant stream and other inland waterways has at last been recognized, steps have been taken to rehabilitate these natural commerce routes and a fleet of 124 barges and tugs is now under construction.*

house about 150 feet long, upper deck house about 30 feet long and pilot house about 20 feet long.

The main deck house is arranged to accommodate the crew, oilers and firemen, steward's department, galley, mess room, laundry, lavatories, fuel tanks and machinery space while the upper house accommodates the pilot, wireless operator and equipment, engineers, spare rooms, lavatories, officers saloon and deck lockers.

The pilot house is designed to give the helmsman an unobstructed view in all directions. It also contains the captain's stateroom with enclosed stairs to the lower house. Two masts to carry wireless antenna and two small derrick masts are provided. The vessels will carry crews consisting of 30 men, all told.

To facilitate the ready handling of the craft in all situations, capstans and substantial bitts are located both fore and aft. The main towing arrangement consists of a steel bridle and traveling hook fitted on the upper deck and supported from the after engine room bulkhead by I-beams.

Double bottoms are fitted under the engine and boiler rooms to carry fresh water. The fresh water capacity is approximately 100 tons. Oil fuel is carried in tank compartments which are located one between the engine and boiler room, extending to the upper deck, and one forward of the boiler room extending to the main deck. The total fuel capacity is approximately 335 tons. Attention has been given to the arrangement of watertight bulkheads in order to protect the vessel from sinking in case it strikes snags, a common occurrence in the Mississippi, or other obstructions. To facilitate ready handling, four rudders are provided.

The lines on which the vessels are designed have been developed from long study of the type of craft necessary to meet the peculiar conditions encountered in this class of service. They show a flat section with slightly rounded bilges which run into an easy forebody, and tunnel section aft. The sheer is flat except at the ends. Special fenders are located at the bow to give a flat bearing for pushing light or loaded barges without danger of fouling due to overhanging ends. The practice of pushing barges on the Mississippi is almost universal.

Power is provided by two, triple-expansion inverted-type upright engines with cylinders 15½ x 25 x 44-inch bore with 26-inch stroke. Each engine develops 900 indicated horsepower. One surface condenser is provided which has a cooling surface of 2400 square feet.

Steam is supplied by two watertube boilers, oil fired, having a total of about 8000 square feet heating surface. Steam is delivered to the engines at 250 pounds pressure to the square inch. The usual auxiliaries, feed pump, bilge pumps, air pumps, etc., are independent units.

The vessels are electrically lighted throughout while the wireless set has a radius of 600 miles. Electric current for wireless and lighting purposes is provided by two generating sets of 5 and 10 kilowatts respectively. These are direct connected, steam

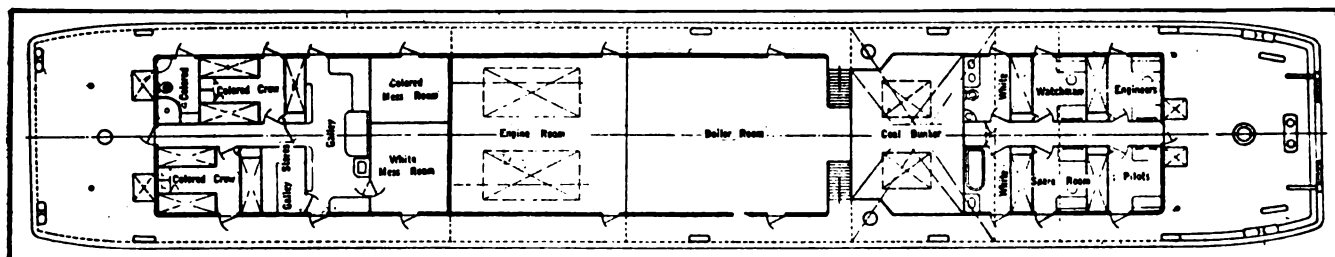


FIG. 3—DECK VIEW OF TUNNEL-STERN STEEL TOWBOAT FOR USE ON THE WARRIOR RIVER

driven units and operate noncondensing at 80 pounds steam pressure.

Fig 2 illustrates the type of barge designed for use on the Mississippi. These vessels will be used in conjunction with the towboats previously described. The specifications call for a vessel 230 feet long, 45 feet molded beam, 11 feet molded depth. The cargo box is 184 feet long x 37 feet wide.

Steel construction is used throughout and all structural material used is to meet American Bureau of Shipping standards. The lines of this craft show a scow form with easy raking ends and rounded bilges. The design reduces resistance in towing up stream.

The cargo box is provided with 16 hatches, eight to each side, 14 x 16 feet, and eight double sliding doors in each side. The available cargo space extends from the deck to the floor giving a total depth of 19 feet. The hold is divided into 18 compartments by means of wing and transverse bulkheads. The wing compartments are oil tight. Pumping arrangements are provided for handling bulk oil cargo. The main deck is equipped with towing bitts, chocks, cleats, etc.

The type of tunnel stern towboat designed for use on the Warrior river is shown in Figs. 3 and 4. This craft is 140 feet long, 24 feet molded beam, 8 feet 9 inches molded depth and is designed to draw 6 feet of water loaded to maximum capacity.

The vessel is to be single deck, fitted with a continuous deck house 112 feet long, which leaves sufficient room at the bow and stern for handling lines.

The forward part of the deck house contains quarters for the engineers, pilots, watchmen and part of the crew while the after end of the house accommodates the white mess room, galley stores, quarters and mess room for the colored crew.

The upper deck house accommodates the captain whose quarters are just abaft the pilot house. The pilot house is arranged to give the helmsman a clear view in all directions. It is fitted with a powerful searchlight for use in river work at night.

The general type of construction has been made as simple as possible to reduce the initial cost. Attention has been given to longitudinal stiffness of the hull. This is accomplished by stanchions and diagonal braces. Heavy oak fenders are carried along each side to protect the hull when docking and in case of collision.

Special attention has been given to the living quarters of the crew. These are steam heated and lighted by electricity. On deck are arranged the necessary number of cleats, bitts, chocks and capstans to facilitate handling the vessel and taking care of tows. Four rudders are provided, two for each shaft, one rudder is placed forward and one aft of each propeller.

The vessel is powered by two triple-expansion inverted-type upright engines with cylinders  $10\frac{3}{4} \times 17 \times 27$ -inch bore with 18-inch stroke. At 200 revolutions per minute, each engine develops 400 horsepower. Steam is supplied by two boilers arranged to burn coal. The usual auxiliaries are provided.

The craft shown in Fig. 5 is a twin screw tunnel stern self-propelled steel barge designed for use on the Tombigbee, Alabama and Black Warrior rivers. It is 280 feet long, 49 feet molded beam, 10 feet molded depth with a maximum draft of 7 feet. The hull is made with the usual barge section with bows designed for easy entrance.

Cargo will be carried on the main deck. An open cargo box located forward of amidships accommodates 1600 tons of coal. At each end of the coal space, enclosures are provided for package freight. The forward enclosure is 24 feet long and is equipped with two hatches 12 x 16 feet with a sliding door in each side. The after enclosure is 50 feet long with four hatches, two 12 x 12 feet and two 12 x 20 feet, with two doors to each side. The crew quarters are forward, below deck, with accommodations for four deck hands, four firemen, cook and messman.

The engine and boiler rooms and officers quarters are all located aft. The pilot house and captain's stateroom are on top of the upper after

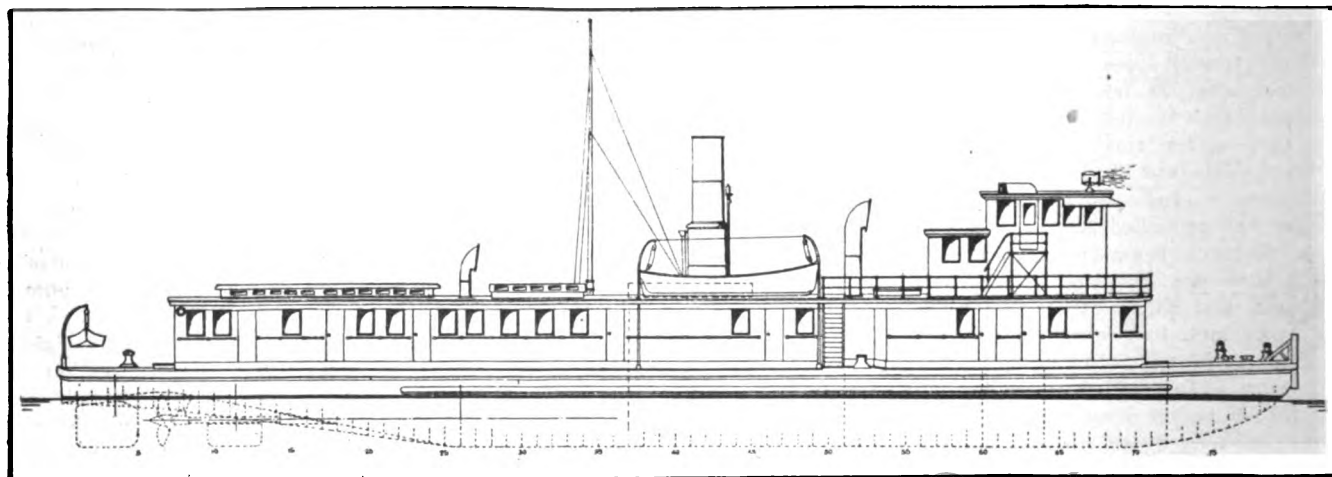


FIG. 4—SIDE ELEVATION OF TUNNEL-STERN STEEL TOWBOAT FOR USE ON THE WARRIOR RIVER

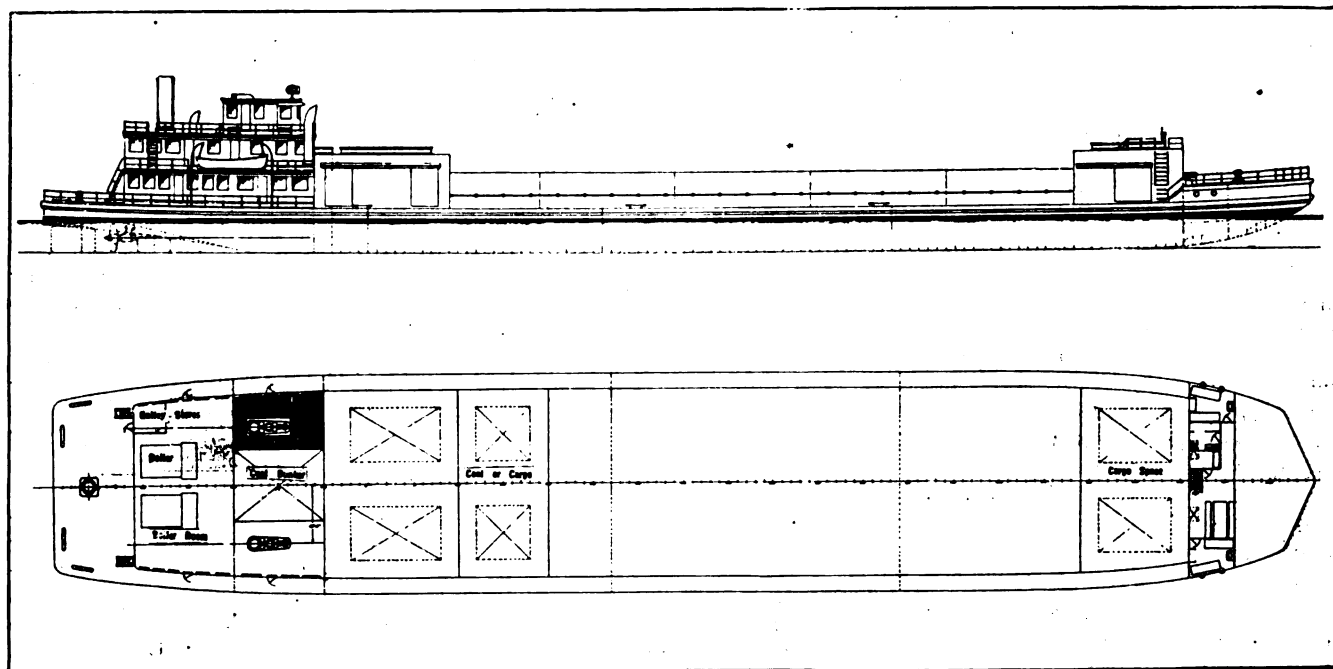


FIG. 5—DECK AND SIDE ELEVATION OF STEEL TUNNEL-STERN SELF-PROPELLED BARGE FOR USE ON SOUTHERN RIVERS

house. The vessel is steered by means of four rudders, two on each side, one forward and the other aft of each propeller. This arrangement gives good results whether going forward or astern. The propellers turn outboard, right and left hand, the vessel having a speed of eight miles an hour loaded.

Power is provided by two inverted-type upright triple-expansion engines with cylinders  $10\frac{3}{4} \times 17 \times 27$ -inch bore with 18-inch stroke, designed to operate at a working pressure of 225 pounds to the square inch. These engines each develop 400 indicated horsepower at a shaft speed of 200 revolutions a minute. One surface condenser, with a cooling surface of 1100 square feet, serves both engines. The air pump and centrifugal circulat-

ing pump are of the independent type.

The boilers, two in number, are of the marine watertube-type, each having approximately 1400 square feet heating surface and 39 square feet grate surface, arranged for bituminous coal, hand fired, with natural draft.

The generating set consists of one  $7\frac{1}{2}$  kilowatt, 110-volt, direct-connected unit driven by a vertical steam engine working at 80 pounds pressure to the square inch. The vessel is electric lighted throughout and carries a 16-inch searchlight for night work. The deck machinery consists of a steam operated capstan at each end of the craft, steam steering gear, chocks, cleats, bitts, etc.

In Fig 6 is shown a steel canal barge designed for use on the New York state barge canal. The general dimensions of this vessel are: Length

inside fenders, 150 feet; beam, molded, 20 feet; depth, molded, 12 feet; dead-weight cargo, 550 tons.

These vessels are to be square ended barges with rounded ends. This gives a sheer at the ends to take up the camber of the beams. The barges are divided into five watertight compartments by four transverse bulkheads. Three cargo holds are provided with two hatches to each hold. The ends are hung from the bulkhead ends by lattice girders.

The crew accommodations will be in the after house. The rudder is attached to a skeg at the after end and is manually operated. Steel construction is used throughout. Special attention has been given to the necessary protecting fenders and the hull throughout is made sufficiently strong to withstand continued rough usage.

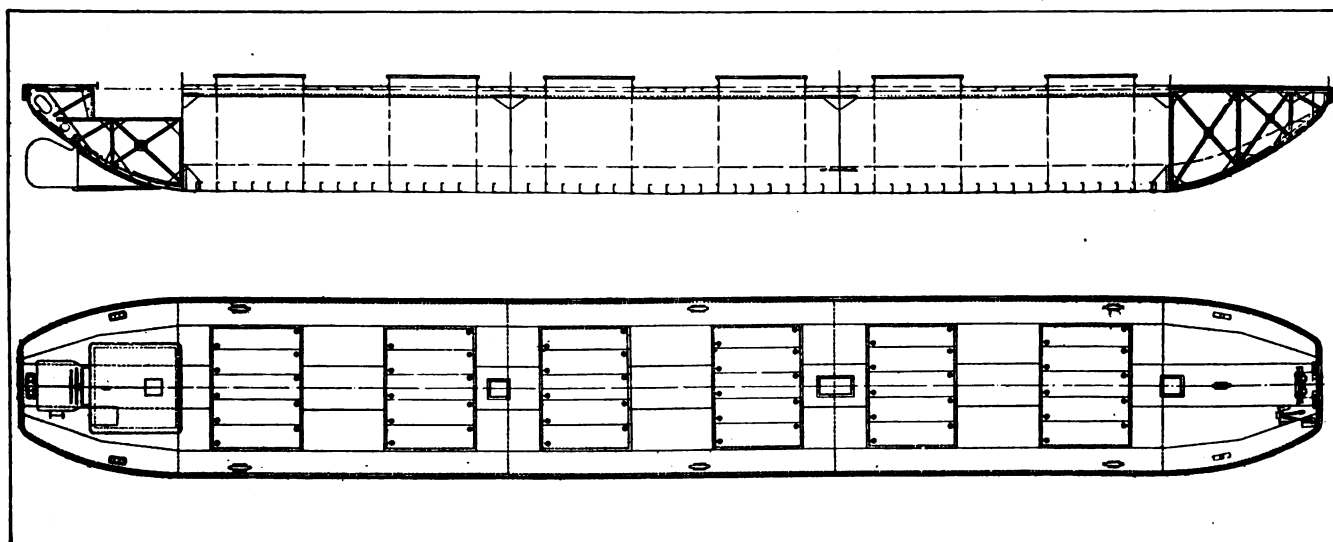


FIG. 6—STEEL CANAL BARGE DESIGNED FOR USE ON THE NEW YORK STATE BARGE CANAL



# England Shows Shipping Devices

Shipping, Engineering and Machinery Exhibition Opens in London — Canada's Ship Plans — Japanese Ship Merger — To Use Oil Fuel — British War Losses

**H**OW inventive ingenuity met the big marine problems of the war will be graphically shown in the shipping, engineering and machinery exhibition which will open in London, Eng., late in September and continue until Oct. 17.

All interests engaged in the production of seagoing tonnage will be represented at the exhibition. It will be the first of its kind to be held in Europe under the new conditions created by the war.

Much interest is being evinced in the undertaking by shipowners, shipbuilders and engineers, all of whom are anxious to be brought into touch with the latest and most approved specialties introduced during the last few years.

The exhibition will be divided into various sections. That devoted to naval engineering will include war vessels, armor plate, steering gears, torpedoes, range finders, repair ship equipment, equipment of war vessels, castings, guns, gun carriages, submarine signalling, apparatus and floating docks.

Naval architecture will include shipbuilding, steam and electric navigation on rivers and canals, shipyard tools and ocean shipping, steam and other vessels.

Marine engineering will embrace coal handling plant, condensers, patent marine stokers, electric light sets, reciprocating engines, marine motor engines, ventilating machinery, gas engines, pumps, marine boilers, marine boiler fittings, turbines, marine oil engines, hydraulic machinery, heating apparatus, etc.

Shipping exhibits will illustrate towage, dredges, lights, davits, lifebuoys, jackets, belts, inland navigation, wireless telegraphy, life belts, life rafts, boat lowering and detaching apparatus, rockets, mortars and other signalling apparatus, etc.

Included in the fishery exhibits will be trawlers (steam and sailing), fishing vessels, boat equipment, fog horns, models of fishing markets, lamps, etc. Among the general marine exhibits will be lanterns for lighthouses and lightships, illuminated buoys, models of lighthouses, lightvessels, diving apparatus of all descriptions, apparatus for raising wrecks, victualling and equipment of ships, harbors, bridges, docks, cranes, mooring buoys,

screw moorings, locks, port works, lifesaving apparatus, logs, cold storage, nautical instruments, chronometers, compasses, etc. The general engineering section will embrace forgings, water softening machinery, machine tools, foundry appliances, hoists and hoisting tackle, acetylene welding and cutting, woodworking machinery, accessories, etc.

## Canada's Ship Plans

Canada's plans for a merchant marine are developing and a fleet manager has been selected with headquarters at Montreal. This location was chosen as it marks the place where the dominion's lake and ocean traffic meet.

The ships now being built for the Canadian government are of three types and seven sizes. They are 1, 2 and 3-deck vessels. Two ships are of 2800 tons each, four of 3400 tons, five of 3750 tons, eight of 4300 tons, eight of 5100 tons, 16 of 8100 tons two of 10,500 tons.

Cost of the vessels is estimated at approximately \$52,000,000. They are under construction at Kingston, Halifax, New Glasgow, Levis, Three Rivers, Montreal, Welland, Collingwood, Port Arthur, Prince Rupert, Vancouver and Victoria.

Six vessels already have been delivered while 30 more are scheduled for delivery in 1919. The remainder will be completed before the end of 1920. The total deadweight tonnage is 263,750.

## Japanese Ship Merger

A new alliance has been organized in Japanese shipping and shipbuilding circles known as the Kokusai Kisen Kaisha, or International Steamship Co. This merger, which has occupied the attention of oriental shipping men for months, is capitalized at \$49,850,000 and will control 500,000 tons of shipping.

The combination assumes an important position in the Japanese shipping world and the outcome of the merger will be watched with interest. The financial strength and tonnage of the new organization entitles it to rank with Japan's "big three" in shipping: the Nippon Yusen Kaisha, the Toyo Kisen Kaisha and the Osaka Shosen Kaisha.

The plan outlined and agreed upon

will absorb tonnage at a rate of \$174.48 per ton with a capitalization to be paid in partly by an assignment of tonnage and partly by cash payments. The company will buy 500,000 tons of ships from its shareholders. The prospectus issued provides for the delivery of half this tonnage on Aug. 1, 1919, and of the other half on Feb. 1, 1920.

The tonnage allotment is as follows: Kawasaki Dockyards Co., 262,000; Asano Shipbuilding Co., 51,600; Yamashita Kisen Kaisha, 23,600; Suzuki & Co. and Hashimoto Kisen Kaisha, combined, 100,000; Katsuda Kisen Kaisha, 20,000; Uchida Kisen Kaisha, 17,800; Ishikawajima Shipyard Co., 5000 and the Nippon Kisen Kaisha, 20,000. The qualifications imposed upon the tonnage taken over are that all vessels are to be of steel, built not earlier than 1917, with a capacity of not less than 4900 tons, deadweight, each, and of Lloyds 100 A1 register. The total cost of the tonnage at the price it will be taken over is \$86,237,500.

## To Use Oil Fuel

All the latest cargo boats belonging to the Netherlands Steamship Co. have been fitted out for the use of both coal and oil fuel. The company will apply this system to all future vessels built to its order, mail boats and merchantmen alike.

The steamer BINTANG, in service on the Java Pacific line, uses oil fuel, and the BENGALIS will do so on her return journey from Java. The bunker and tank capacity of those vessels, however, is not sufficient for a supply of oil for the double journey from the East Indies to Holland and back. As for the remainder of the company's fleet, it has been found impossible, at present, to adapt them for the use of liquid fuel. (*Handelsblad*.)

## British War Losses

British merchant vessels to the number of 2475 were lost during the war while 14,700 noncombatant British seamen lost their lives. These figures were quoted by the Mercantile Marine Service association at its sixty-second annual meeting recently held in Liverpool. The vessel losses were computed as follows: Merchant vessels 2475; fishing boats, 570. Ninety-three vessels with a gross tonnage of 174,525 were lost without a trace.

# Payne Alters Hurley Ship Plans

New Shipping Board Chairman Hopes to Save \$7,000,000 Yearly by Reducing Staff — Holds Ships at High Figure — Will Change Accounting Methods

**J**OHN BARTON PAYNE, the new chairman of the shipping board, is beginning to exhibit to the shipping world that his policies are different from those of his predecessor, E. N. Hurley. According to persons close to the board, it is already evident that Mr. Payne considers his administration must meet conditions entirely different from those which confronted the Hurley administration and that these conditions demand a different method of treatment. Mr. Payne considers it a necessity to practice the strictest economy.

Economy, as it is interpreted by shipping board today, it is said, means the return to the United States of as much money from the sale of government shipping property as can be raised. Furthermore, the new chairman is determined that all extra establishments of the shipping board must be abolished. The bureau of planning and statistics has been disbanded and press agents and other unessential employees are to be dismissed. Even J. H. Rosseter, director of the division of operations, it is said is to resign and all the bureaus to be placed upon a lower cost basis. According to the plan already said to be in mind, Chairman Payne will cut the salary list and thereby reduce the overhead expense of the board by \$7,000,000 per annum.

## Favors Private Ownership

Persons close to Mr. Payne say he does not contemplate any radical change in the policies of the board although his method of carrying those policies out, will differ from Mr. Hurley's. He is reputed to believe that the government should not engage in any form of private business and therefore he will attempt to bring to an end both the business of shipbuilding and of ship operation on the part of the government. So long as these two activities must be engaged in by the government, Mr. Payne wishes to exercise those functions with the smallest expenditure possible.

While it may be possible to bring the business of shipbuilding to an end rapidly and thereby enable the disbanding of the Emergency Fleet corporation, the business of ship operation must continue until all the government ships are sold to private interests, or permanently disposed of. Under the Payne plan of rigid econ-

omy this last promises to be a long drawn out affair. Mr. Payne is reputed to be opposed to writing off \$1,000,000,000 of the cost of building our vast merchant marine. He would prefer to return to the treasury of the United States every cent that congress has appropriated for shipbuilding.

## Must Sacrifice Wood Ships

Even under this scheme, Mr. Payne is ready to acknowledge that it will be impossible to obtain for the wooden ships the full cost to the government. They must be sacrificed at a loss. But he hopes to avoid such a loss on the steel ships. Mr. Payne is said to be holding out for a quotation on the standard steel ships of \$210 a ton for spot deliveries. That is a higher price than has heretofore been asked for the vessels. Many commitments of sales were made before Mr. Payne took charge and most of these were made through the New York sales office established under the Hurley administration. Mr. Payne is said to be planning to discontinue the New York sales office entirely.

Under the suggested Payne plan, it is said, with the full cost quoted on ships offered for sale, the purchaser would be required to make a cash payment of 25 per cent, and payments of 20 per cent each year until the whole had been paid. Interest would be charged on the deferred payments. Such a marking up of the value of these ships would check the ship sales and the government would be compelled to continue its possession and operation. So long as the government is compelled to continue operating such ships as it owns, Chairman Payne believes that the government should enjoy the full return from such operation. The government should charge the full freight that can be obtained, with due consideration to the needs of American commerce. Shipowners will not object to this policy as their main fear from government operation is that the vast power possessed by the shipping board through the ownership of a large merchant fleet would be used to break the freight market. Mr. Payne is said not to entertain any such intention.

But whether it will be considered good business by private interests to purchase a government ship under

such terms is problematical. Ship operators will be able to make a profit of \$60 a ton of shipping per year up until 1921. But a 10,000-ton ship costing \$210 a ton when purchased from the government, will represent a capital investment of \$2,100,000. During the first year, the owner will be able to earn \$600,000 net, of which amount the government takes \$360,000 in excess profits taxes, leaving to the owner or purchaser a profit of but \$240,000. To earn this much the owner has been compelled to pay down to the shipping board in cash 25 per cent of the sale value of the ship, or \$525,000, leaving a balance of \$1,575,000 plus interest unpaid. During the second year under the proposed plan the owner would have to pay to the shipping board \$315,000, plus \$78,750 in interest on the purchase price of the ship, or a total of \$393,750. Deducting from this second payment, the net earnings from the ship during the first year, the purchaser will be compelled to put up \$153,750 additional capital on his property.

## To Revise Methods

After the second year the earnings of the ship will be problematical. When paying profits taxes to the government the owner is permitted to deduct from 5 to 10 per cent for structural depreciation, but the government will not allow any deduction on account of a depreciation in the market value of the ship. It is estimated by some ship operators that after the first year ships will not be worth more than \$180 a ton, and the capital account of an operator who has invested in a 10,000-ton government-built ship will have depreciated accordingly. An operator should at least be able to discount his capital depreciation from the earnings of the ship during the first years of its service, otherwise the investment will not be considered a good one.

In justice to Mr. Payne, however, he is desirous of revising the accounts of the shipping board in such a manner as to make all profits and losses appear in plain black and white. This will necessitate an extensive revision of accounting methods. The manner in which the operating returns have been kept affords an excellent example of what Mr. Payne has to reform.

(Concluded on page 474)

# Problems of the Vessel Operator

Listening Devices for Detecting Submarines — To Train Seamen  
—Unique Sailing Vessel—Bunkering Prices Throughout the World

**E**ARLY in the war, efforts were directed toward the improvement of listening devices for detecting submarines. As a result, great advances were made in hydrophones. The French navy developed a hydrophone known as the Walser gear which embodies two sets of a number of sound receiving plates mounted on two areas which are convex to the sea. One is on each side of the ship's hull near the keel. By this device the sound waves are transmitted to the air inside the ship. The position of the sound focus is determined by means of a funnel from the end of which a tube leads to the listener's ear.

Ship and water noises seriously interfere with the detection of submarines but this has been overcome in a measure by towing a directional hydrophone, encased in an artificial "fish" behind a chasing ship. This "fish" is built along stream lines to eliminate noise as much as possible. As the "fish" can be towed quite a distance behind the vessel, noises from the ship do not reach it.

Even though apparatus is perfected for the detection of submarines it will prove useless if the submarine can be made practically noise proof. Even at the present time the range of hearing is not more than 100 yards in the case of a modern submarine traveling at a speed of two to three knots.

One system that appears to be practical involves the use of a beam of sound waves sent out by the chasing ship in much the same manner as a searchlight is used. Thus it is possible to sweep the seas and when a submarine happens to come within range of the beam the sound waves are reflected and echo effects are obtainable.

To enable vessels to navigate waters full of obstructions a device called a leader gear recently was put in use. This consists of a cable laid on the bottom of a channel leading into a harbor or through a mine field. An alternating electric current is passed through the cable and by means of delicate instruments placed aboard the ship it is possible to obtain aural or visual indications of the cable. This enables the vessel to be steered safely, even at a speed

of approximately 20 knots an hour. Wireless telegraphy and telephony made rapid developments during the war. By the use of oscillating thermionic valves, the usefulness of these devices was greatly increased. It is now possible to hold communication with ease between a land station and a ship or airplane over considerable distances.

Exhaustive experiments have been carried out to obtain data regarding explosion pressures for mine and depth charge operations. When the effect of different charges at various distances is known, it can readily be determined how to lay out mine fields and what size and type of charges are the most efficient.

In sound ranging investigations to determine the characteristics of pressure waves generated by the explosion of charges at sea, it was found that when a hydrophone was used to pick up the waves, a good record could be obtained by the explosion of a number 9 detonator at least two miles away. The explosion due to charges of two pounds of TNT have successfully been recorded at 14 miles. The explosion of 300-pound depth charges have been recorded at 200 miles.

Based on these results, a system of sound ranging under water was developed. Four hydrophones were laid out five miles apart along a base line in deep water, a mile or so from shore. In addition, two pilot hydrophones were placed along a line at right angles to the base line, one five miles out and another ten miles out. Cables were laid from the hydrophones to a recording instrument placed in a shore station. With this sound ranging system, the shock of distant explosions occurring under water affect the various hydrophones in turn and as time intervals can be read to two or three thousandths of a second, it is possible accurately to measure the time intervals. By measuring the time intervals it is an easy matter to find where the explosion that set up the sound wave took place.

Up to 50 miles, the location of an explosion under water can be determined within a few hundred yards by a single station but for greater accuracy the co-operation of two stations are necessary to locate explosions at greater distances. Explosions of mines or torpedoes at any

point in the North sea were readily located by stations in Great Britain. In the war, during the bombardment of the Belgian coast, it was common thing for a monitor to proceed in a fog to a position some miles from the coast and by dropping depth charges, have its position accurately determined from stations on the coast of England. So accurately was this done that it was found that when the monitor's guns were trained in selected directions, objectives several miles inland could be hit with regularity.

## To Train Seamen

The United States Junior Naval Reserve, which is sustained by the American people for the training of boys for sea service, has received the hearty approval of many American shipping interests. This unit is not connected with the navy or supported by the government.

Why shipping interests support the reserve, according to H. H. Raymond, president of the American steamship association, is as follows:

"It is an axiom that sea borne commerce must have sea trained men. 'American crews for American ships' is not a mere slogan; it is a statement of a necessary correlative to our country's maritime position. American ships *must* have American crews, and such crews be men maintained and trained under American standards and officered by American brains and discipline—with the imagination, self-reliance, and Yankee initiative that in the days of the clipper ship made our flag the wonder of the sea. Even before the war and prior to our country's great program of ship construction, American ship-owners were painfully aware of their dependence upon alien labor. This well understood weakness need not be dilated upon here. A single instance is that on 453 American ships, of the lake and coastwise trade, the personnel of American seamen was less than 14 per cent.

"The United States shipping board has a well-planned and carefully extended recruiting service and training system, which in connection with the like effort of the navy department to help merchant marine needs has accomplished splendid results. But the training and opportunities offered under these plans have been neces-

Abstracted from a paper recently read before the North East Institution of Engineers and Shipbuilders, England, by Prof. J. C. McLennan.

sarily restricted to service age requirements in an effort to gain immediate results. The shipping board recruiting service place their entrance age requirement at 21 years, and boys below 18 are not allowed enlistment in the United States navy.

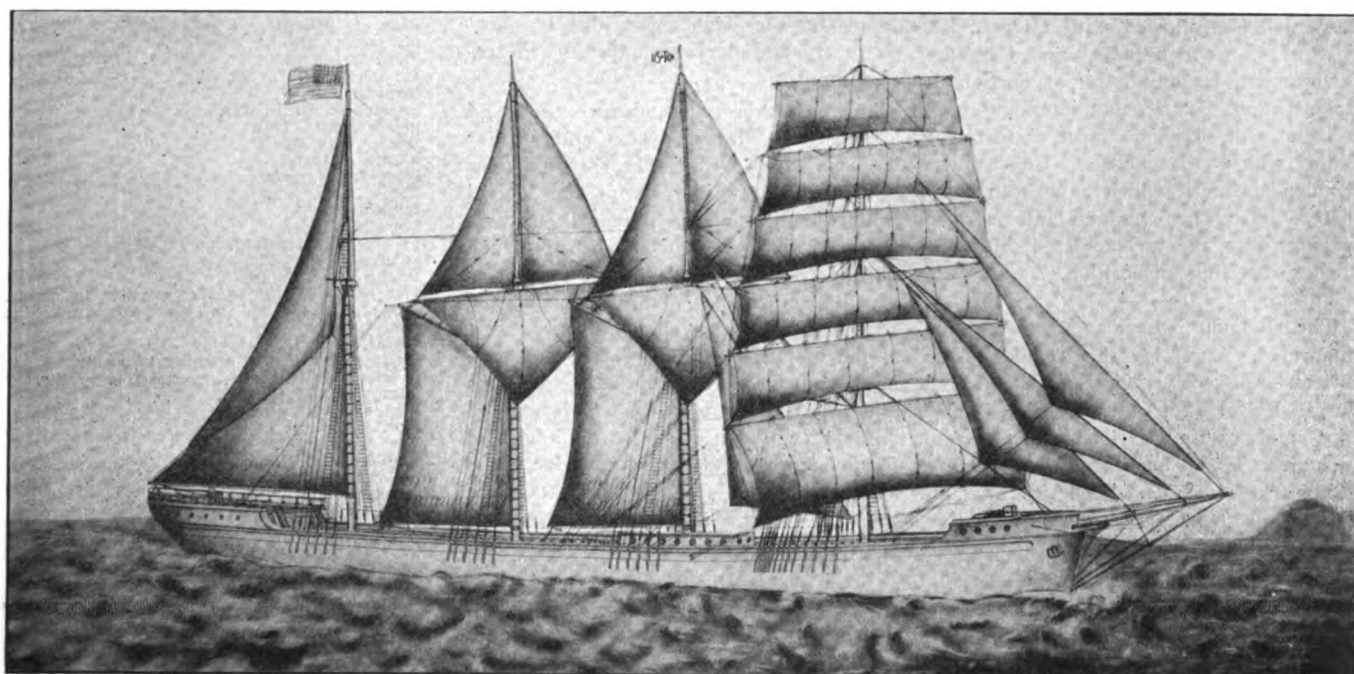
"The reason that the shipping interests of this country are interested in the work of the junior naval reserve is not only because our future sailors are hidden in the boy members of the organization, but because by encouraging the coming generation in discipline and love of the sea, the support and growth of our merchant marine is assured for all time. In line with any constructive policy to man our newly built and newly

ing and have supported the several agencies now working in England along lines similar to that of the junior naval reserve."

Vessel operators on the Great Lakes are also in favor of the movement. At a recent meeting of the Lake Carriers' association it was resolved that the work of the junior naval reserve be given the cordial approval of the association.

Among the members of the Cleveland local council of the reserve are Harry Coulby of the Pittsburgh Steamship Co.; Carl Osborne and L. C. Hanna, of the M. A. Hanna & Co.; Samuel Mather, of Pickands, Mather & Co.; Maj. S. J. Logan, of the United States marine corps; S.

three of the wooden hulls purchased by his company from the shipping board. These three vessels are to be rigged as 4-mast barkentines, having in addition to a full set of yards on the foremast, one yard on each of the main and mizzen masts, to carry the topsails. The strong point in favor of having a yard on the main and mizzen masts is that it makes the lower sale 25 per cent smaller than it would be with the regular fore and aft rig. Anybody who has ever sailed in large schooners will appreciate what an advantage this will be in handling the sails. Besides this, the sails will last much longer, because they will not have the same chance to wear out from slatting in light winds and heavy seas as would a larger sail. It



FOUR-MAST BARKENTINE WITH UNIQUE RIG DEvised TO ELIMINATE REEFING AND TO FACILITATE COMING ABOUT—IT IS CLAIMED THAT LESS TIME IS REQUIRED TO BRACE THE TOPSAIL YARDS THAN IS REQUIRED TO CLEW UP REGULAR GAFF TOPSAILS AND SHIFT THEM OVER THE SPRING STAYS

building ships, and in co-ordination with present efforts of the United States shipping board, it is essential that an organization like the United States junior naval reserve, with a broad and systematic plan for interesting and training the younger boy, be encouraged and helped. By proper extension of the work of the reserve another quarter of a century would see the crew of every American ship successfully dominated by American seamen and an almost native personnel insured.

"No opportunity has been ever neglected by England to foster her maritime supremacy, and English shipowners have long been aware of the value of a sea-training system for boys of 14 and older. Committees of English shipowners have worked intelligently to establish such train-

Livingstone Mather, of the Cleveland-Cliffs Iron Co.; Capt. J. H. Clark, Guardian building, and George Marr, secretary and treasurer of the Lake Carriers' association.

### Will Rig Wooden Ships as Sailers

Six wooden vessels of the Ferris type have recently been purchased from the Emergency Fleet corporation by the Universal Shipping & Trading Co., Seattle, and are to be rigged as sailing vessels. The price paid for them has not been made public but delivery is to be made without delay as the hulls in question are lying at anchor in Seattle.

Capt. C. T. Larsen, port captain of the Universal Shipping & Trading Co., has evolved a unique type of rig for

also gives the vessel a larger sail area as the illustration shows. The topsails will not have to be clewed up and shifted over the spring stays every time the vessel is brought about. It will also eliminate much reefing in bad weather, because those sails compared to the larger fore and aft sails will be like a single reefed sail.

Captain Larsen got the idea of the rig from the schooner COLUMBIA RIVER, which is rigged somewhat similar, but with the difference, that on the COLUMBIA RIVER the upper topsails are made in one piece and pull down on the yard, whereas in this case the upper topsails are two separate sails, running on wires alongside the topmast and clew up to the masthead, the same as an ordinary gafftopsail.

While the Ferris hulls are not constructed on exactly sailing ship lines,

the purchasers believe that they will operate successfully under sail. Ferris-type steamers carry from 1,200,000 to 1,400,000 feet of lumber but these hulls, equipped as sailers, are expected to have a lumber capacity of double the steamers or approximately 2,400,000 feet. Since it is intended to use these sailing ships in Pacific trade, where the carriage of lumber is a matter of importance, the increased carrying capacity under sail is an item of great importance.

Added capacity will be secured by the removal of the deck houses and the addition of space originally intended for engines and boilers. It is known that other firms are figuring on making purchases of shipping-board hulls and the experience of the Universal company will be followed with interest. A fleet of 45 wooden hulls, owned by the government, is now lying at anchor in Lake Union, Seattle, and intending purchasers will have a large assortment from which to choose. Government wooden steamers, which have been completed, have been pressed into service leaving only the uncompleted hulls at anchor awaiting disposition.

The Belgian steamer *MENAPIER* inaugurated, Aug. 18, the regular New Orleans-Antwerp service of the Lloyd Royal Belge. The steamer is of 8200 tons and carried miscellaneous cargo, including 93,333 bushels of wheat and 1630 packets of rice. Frederick Leyland Co. is the New Orleans representative of the Lloyd Royal Belge.

## Bunkering Prices

The subject of bunkering, according to the *Journal of Commerce*, New York, is becoming the most important factor in connection with shipping, England having practically made it known that she can no longer act as seller of coal for the operation of neutral vessels, other supplies must be sought. Fortunately the United States has plenty of both bituminous and anthracite, and may have to take the place of England in supplying the former for ship consumption. The situation of the coal market in Europe is bordering on chaos, and this must of necessity be reflected at those depots depending upon British supply, by a sharp increase in price when the present stocks are exhausted. Many of the depots are already short of coal, and having difficulty in replenishing.

There has been an advance of 2s 6d at the West Indian depots and further increase may follow if the situation does not ease up considerably at the United States loading ports. Neutral steamers are paying more than the allied at the United Kingdom ports, and necessary permits must be arranged with the British authorities well in advance. Just at the moment with the scarcity of supplies, varying government regulations and fluctuating prices at the United Kingdom ports, it is said to be advisable for owners and operators to give some leeway to their coal suppliers to make the best possible arrangements as circumstances and conditions warrant.

Following is a list of prices prevailing at present at foreign ports, as quoted by Willard, Sutherland & Co.:

Gibraltar, 105s.  
Algiers, 104s.  
Marseilles, 105s.  
Constantinople, no coal available.  
Oran, 105s.  
Port Said, 108s 6d, plus 5s Emergency tax.  
Newcastle, 75s to 80s.  
Southampton, 96s 6d.  
Liverpool, 42s 6d to 50s.  
Plymouth, 100s.  
Hull, 52s to 62s.  
Fowey, 106s.  
London-Gravesend, 80s 6d.  
Dartmouth-Portland, 87s 6d.  
Cardiff, 56s to 60s.  
Swansea, 60s.  
North of Scotland, no coal available.  
Antwerp, 87s 6d to 92s 6d American and Allied tonnage.  
Antwerp, 97s 6d, neutral tonnage.  
Bordeaux, no coal available.  
Bilibao, 130 pesetas.  
Azores, 110s.  
Madeira, 104s 6d.  
Teneriffe, 98s.  
Las Palmas, 88s.  
St. Vincent, 87d.  
Barbados, 97s 6d.  
St. Lucias, 97s 6d.  
Trinidad, 96s 6d.  
St. Thomas, V. I., 96s 6d.  
Bermuda, \$20.  
Curacao, D. W. I., \$22.  
Rio de Janeiro, 145s.  
Santos, 147s 6d.  
Rosario, 141s 6d.  
Bahia Blanca, 143s.  
Buenos Ayres, 139s.  
La Plata, 139s.  
Montevideo, 139s.  
Halifax, N. S., \$10.50.  
Sydney, N. S., \$7.25.  
Delagoa Bay, 33s 6d.  
Port Natal, 35s 6d to 37s, according to quality.  
Cape Town, 43s 10d to 45s 16d, according to quality.  
Dakar, 120s.  
Singapore, 81s to 91s, according to quality.  
Coomb, 75s to 81s 6d, according to quality.  
Aden, 102s 6d to 108s.  
Bombay, 26.8 rupees.  
Karachi, 24 rupees.  
Port Kemia, 18s.  
Adelaide, 34s 9d.  
Albany, 40s 9d.  
Fremantle, 40c 9d.  
Melbourne, 29s 9d.  
Sydney, 27s.  
Sydney Harbor, 20s.

# Condensed Reviews of Latest Books

*The Instructor, the Man and the Job*, by Charles R. Allen; cloth, 373 pages, 5x7½ inches; published by J. B. Lippincott Co. and furnished by THE MARINE REVIEW for \$1.50.

The volume is written for instructors of industrial and vocational subjects. The author is superintendent of instructor training for the Emergency Fleet corporation and has written the book under discussion from a practical point of view.

It is pointed out that teaching is a trade having its tools, methods and appliances and that these must be used properly to attain the desired results. Fundamental principles of pedagogy are presented, applied to vocational problems. The book is divided into nine parts as follows: Training in the plant, the analysis, and classification of trade knowledge, establishing an effective

instructional order, putting it over, methods of instruction, lesson planning, instructional management, organization for training in industry and the use of this material in instructor training courses.

An appendix is included which treats on the use of this material by foremen and for self-training and gives an alphabetical list of some of the most important terms used in the book.

It has long been realized that the art of imparting practical knowledge to others in a limited amount of time is often a hard problem. The author's instructions, however, all taken from practical experience, help to smooth the way and should be productive of satisfactory results.

The book is thoroughly understandable as theory has been wholly eliminated.

It is written in clear language and will be of value to all who are engaged in teaching others to train themselves for present day industrial vocations.

*Uttmark's Guide to Examination for Masters and Mates*, by Capt. F. E. Uttmark; cloth; 196 pages, 5¼ x 7¼ inches, published by the author and furnished by THE MARINE REVIEW for \$3.50.

The book is in its fourth edition and has been revised and enlarged. It contains valuable additional information on instruments, compass errors, sailings, latitude, logarithms, chronometer sights, amplitudes and tides.

The book is written for the guidance of those wishing to pass United States examinations for Masters and Mates.



States local examinations for masters and mates. It is written in question and answer form and contains information necessary to enable the applicant successfully to pass an examination.

The author points out that he has not attempted to furnish anything new but that he has endeavored to furnish a complete guide that is clear and comprehensive yet scientifically accurate. The questions and answers given are those that are used by the examiners. Those pertaining to mates' licenses are marked with an asterisk. Thus the applicant for this license need not familiarize himself with the full contents of the book.

The book is complete and shows the result of much study and planning to present a difficult subject in a manner that is easily understood by the average applicant for a mates' or master's license.

## July Ore Shipments

Shipments of iron ore fell off during August, the total amount moved being but 4,423,133 tons, which is 4,750,296 tons less than the amount moved in July. In comparing the figures with those of August, 1918, when shipments were 9,725,331 tons, a decrease of 5,302,198 tons is shown. Total shipments to Sept. 1 are 29,604,981 tons. Compared to the figures for the corresponding period of last year, 39,334,264 tons, a decrease of 9,729,283 tons is shown.

Detailed shipments by ports are:

Port	Aug. 1919	To Sept. 1, 1919
Escanaba .....	336,334	2,757,897
Marquette .....	277,843	1,169,569
Ashland .....	375,245	3,320,090
Superior .....	939,979	6,426,447
Duluth .....	1,645,788	11,466,924
Two Harbors .....	847,944	4,464,054
<b>Total</b> .....	<b>4,423,133</b>	<b>29,604,981</b>
1919 decrease .....	5,302,198	9,729,283

## Soo Canal Report

The total movement of freight through the Soo canal in August was 6,609,961 net tons, a decrease of 5,306,191 net tons when compared with the total movement of 11,916,152 net tons in July. The sharp decline was due to the strike of ore handlers on the upper lake railroads and docks. When compared with the shipments for August of last year which totaled 12,789,801 tons, a decrease of 6,179,840 net tons is shown. The iron ore movement shows a decrease of 4,184,615 tons when compared with the amount moved in July. All other items, except stone, show substantial decreases. On the other hand, the stone movement shows an increase of 3072 tons. Passenger traffic shows a slight increase. The ton-

nage figures for the past six years follow:

	Net tons
August, 1919 .....	6,609,961
August, 1918 .....	12,789,801
August, 1917 .....	13,967,108
August, 1916 .....	14,031,262
August, 1915 .....	10,540,781
August, 1914 .....	8,934,986

Of the total freight carried in August, 6,301,634 tons were handled through the United States canal while 308,327 tons passed through the Canadian canal.

The following tabulation gives the season's figures in detail for 1919 and 1918:

EASTBOUND		To Sept. 1, 1919	To Sept. 1, 1918
Lumber, M feet B. M. ....	155,704	192,337	
Flour, barrels .....	3,793,274	4,370,454	
Wheat, bushels .....	56,106,225	12,746,942	
Grain, bushels .....	32,626,065	14,850,305	
Copper, net tons .....	27,286	53,004	
Iron ore, net tons .....	29,407,053	38,734,187	
Pig iron, net tons .....	3,548	10,582	
Stone, net tons .....	31,862	35,120	
Gen'l merch., net tons .....	43,815	23,125	
Passengers, number .....	23,353	13,812	
WESTBOUND			
Coal, soft, net tons .....	8,149,369	8,254,285	
Coal, hard, net tons .....	1,148,176	968,420	
Iron ore, net tons .....	46,983	74,928	
Mfd. iron and steel, net tons .....	85,118	24,438	
Salt, net tons .....	57,069	52,615	
Oil, net tons .....	236,319	209,266	
Stone, net tons .....	73,304	313,280	
Gen'l merch., net tons .....	257,806	237,125	
Passengers, number .....	24,643	14,185	
SUMMARY			
Vessel passages, number .....	11,300	12,390	
Registered tonnage, net .....	31,434,716	37,392,752	
Freight			
Eastbound, net tons .....	32,630,084	40,266,331	
Westbound, net tons .....	10,054,184	10,134,367	
Total freight, net tons .....	42,684,268	50,400,698	

## Van Hise Changes Hands

The steamer CHARLES R. VAN HISE recently was sold by the United States shipping board to the Morrow Steamship Co., Cleveland. The price paid for the steamer was not given out. This vessel formerly was owned by the Pittsburgh Steamship Co., Cleveland.

The VAN HISE was taken over by the shipping board about a year ago at a price said to be \$640,000. As the vessel was acquired for deep water service, it was decided to take her through the Welland canal locks on her beam ends. She was cut in two at Buffalo and successfully rolled over, as detailed in THE MARINE REVIEW for April and May, 1919. The forward section of the vessel was towed to Port Colborne, Ont., and taken through the first lock.

After the armistice was signed, the plans for taking the vessel to tidewater were abandoned and she was offered for sale. The forward section was towed back to Buffalo. It is estimated that it cost the government approximately \$2,500,000 to buy the vessel, cut her in two and fit her for her unique voyage through the locks.

Both sections of the vessel are now at Buffalo. The new owner will put them together but it has not been decided where the work will be done. The

VAN HISE was built in 1900 by the Superior Shipbuilding Co., West Superior, Wis. She is 458 feet long, 50.2 feet beam, 25 feet deep, has a gross tonnage of 5117 while her net tonnage is 3673. She is powered with quadruple expansion engine, with cylinders 20½ x 30 x 43½ x 63 inches bore with 42-inch stroke, which develops 1750 indicated horsepower.

## August Lake Levels

The United States lake survey reports the monthly mean stages of the Great Lakes for the month of August, 1919, as follows:

	Feet above mean sea level	July	August
Superior .....	602.58	602.59	
Michigan-Huron ...	581.34	581.14	
St. Clair .....	576.24	575.92	
Erie .....	573.45	573.14	
Ontario .....	247.75	247.33	

Lake Superior is 0.01 foot higher than last month, 0.24 foot higher than a year ago, 0.03 foot above the average stage of August of the last 10 years, 1.34 feet below the high stage of August, 1876, and 0.99 foot above the low stage of August, 1879.

Lakes Michigan-Huron are 0.20 foot lower than last month, 0.62 foot lower than a year ago, 0.29 foot above the average stage of August of the last 10 years, 2.37 feet below the high stage of August, 1876, and 1.29 feet above the low stage of August, 1911.

Lake Erie is 0.31 foot lower than last month, 0.59 foot higher than a year ago, 0.52 foot above the average stage of August of the last 10 years, 0.97 foot below the high stage of August, 1876, and 1.76 feet above the low stage of August, 1895.

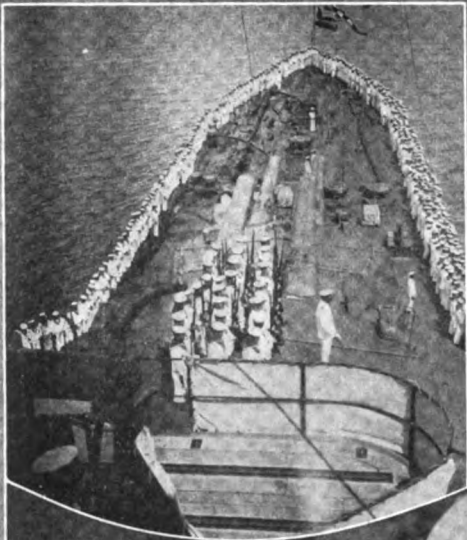
Lake Ontario is 0.42 foot lower than last month, 0.90 foot higher than a year ago, 0.84 foot above the average stage of August of the last 10 years, 0.93 foot below the high stage of August, 1862, and 2.98 feet above the low stage of August, 1895.

## Lake Erie Receipts

Out of a total of 4,423,133 tons shipped from upper lake ports in August, Lake Erie ports received 3,627,411 tons, as shown by figures compiled by THE MARINE REVIEW. The balance on dock Sept. 1 was 6,705,062 tons against 8,152,214 tons on Sept. 1, 1918. Detailed figures are:

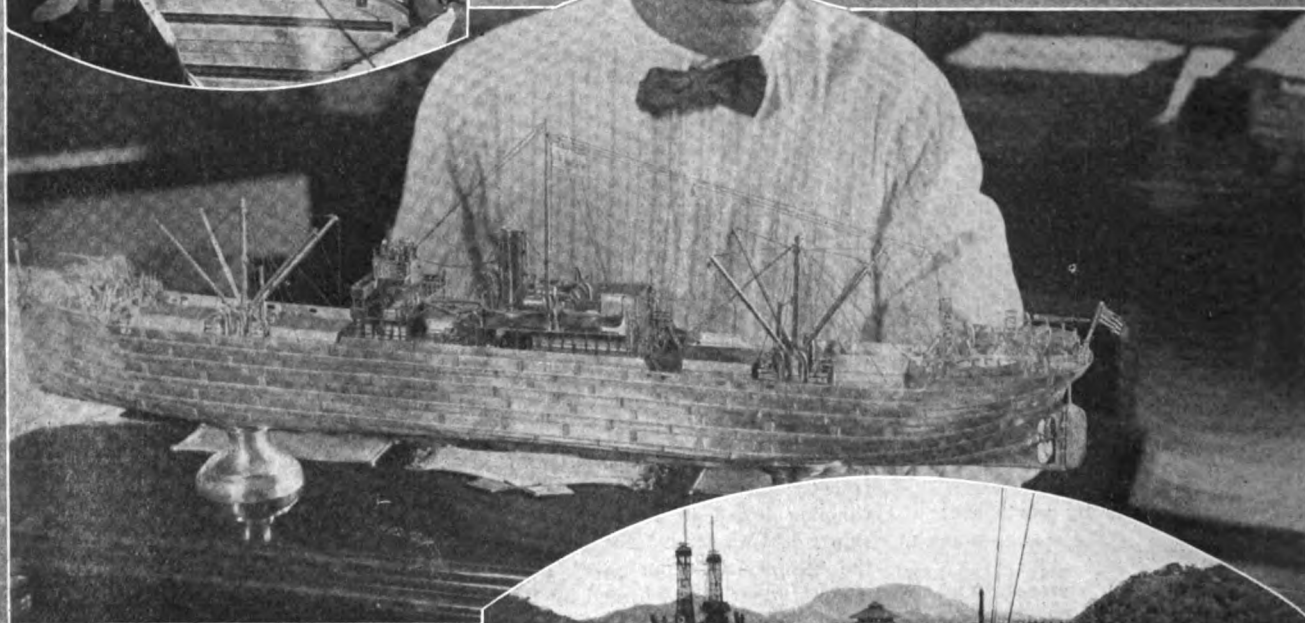
Port	Gross tons
Buffalo and Port Colborne .....	400,787
Erie .....	98,216
Conneaut .....	817,487
Ashtabula .....	805,735
Fairport .....	184,903
Cleveland .....	671,534
Lorain .....	291,471
Huron .....	122,965
Toledo .....	180,462
Detroit .....	53,851
<b>Total</b> .....	<b>3,627,411</b>

# Photographs From Far and Near

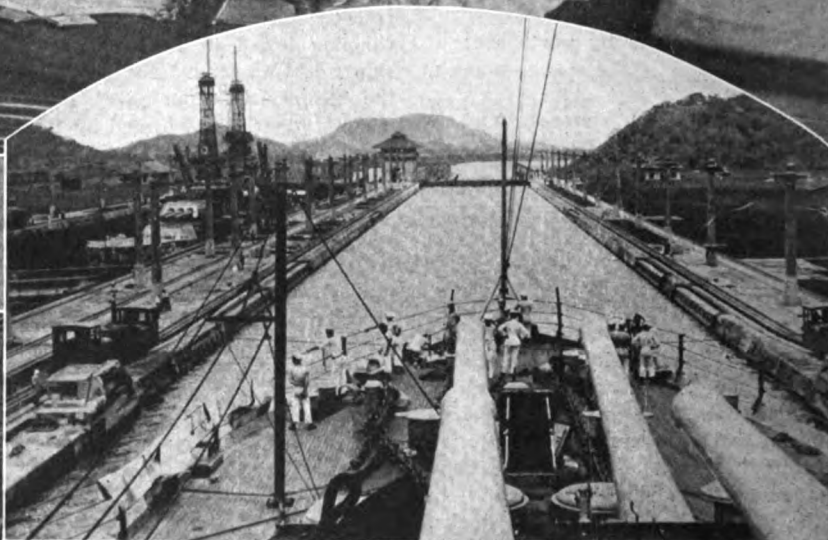
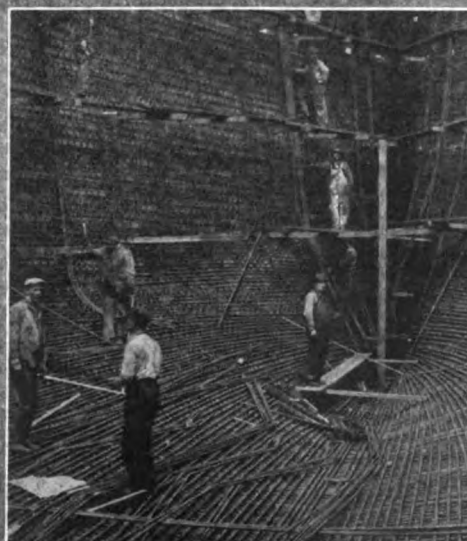


*THE crew of Japanese warship Izumo salutes the emperor as he inspects the German submarines which were turned over to Japan at the conclusion of the war*

*CHARLES PIEZ, formerly director-general of the Emergency Fleet corporation, has been presented a silver model of an 8000-ton steamer by the Northwestern Shipbuilders' association, through C. H. Hamilton. A letter from the association thanks Mr. Piez for his work for the country during the war*



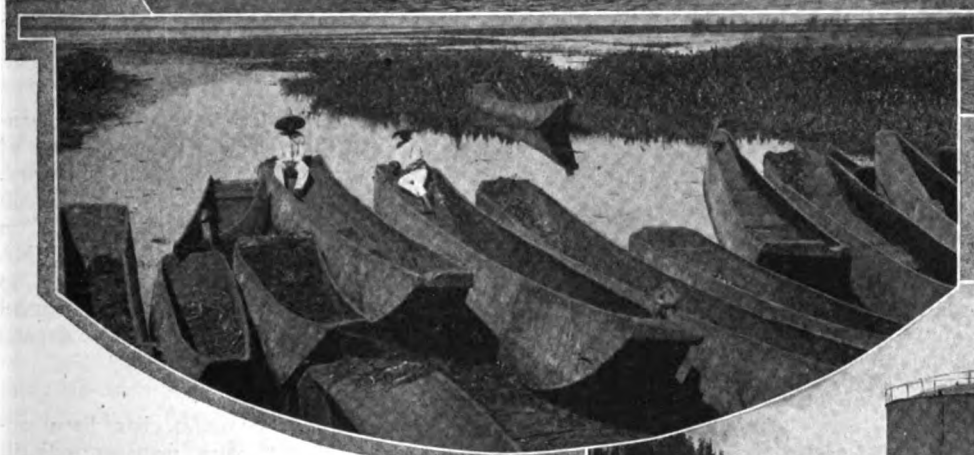
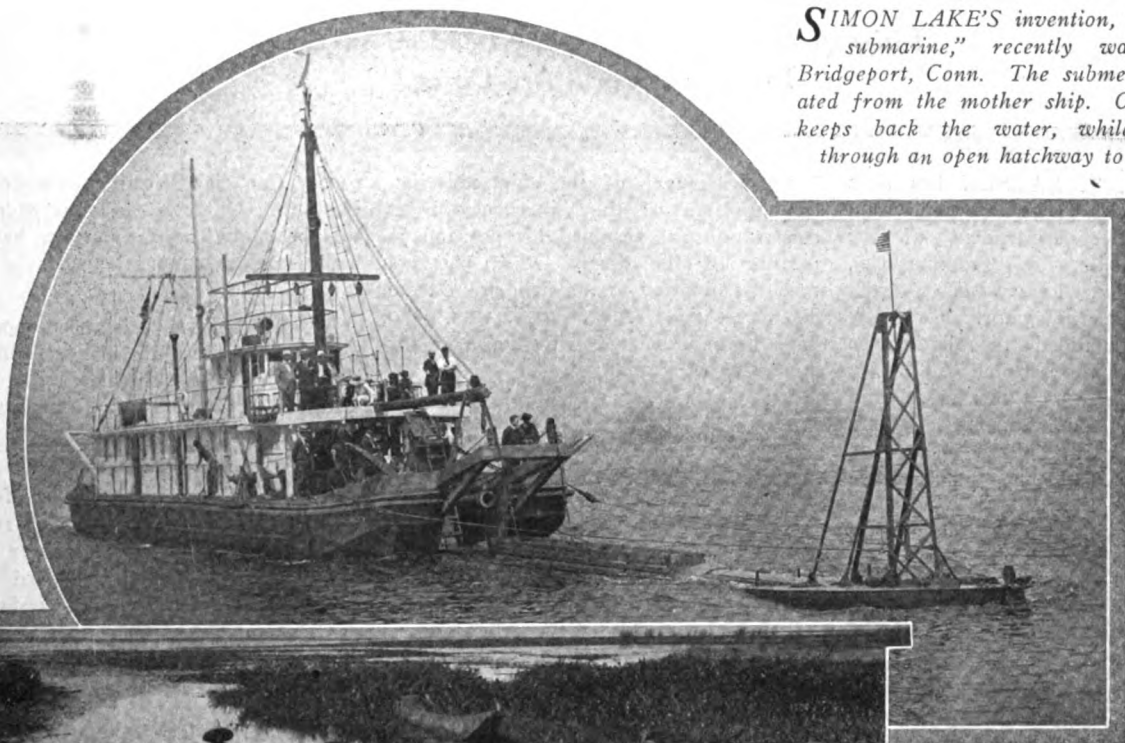
*CONCRETE ship construction at Government Island yard, California*



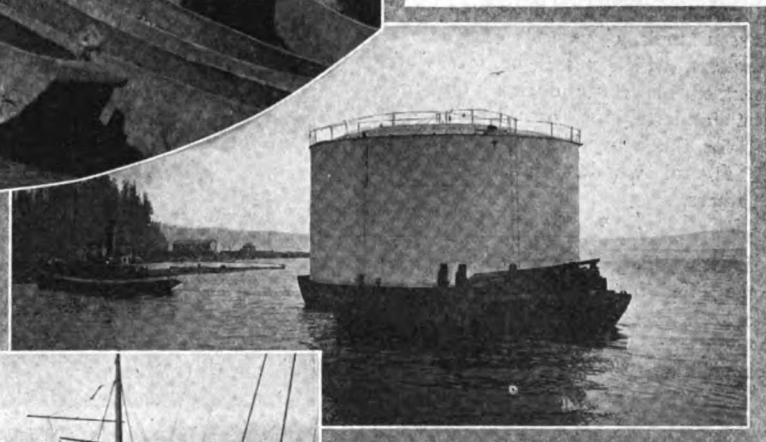
*WARSHIPS of the Pacific fleet passing through the Panama canal. The photograph was taken from the gun turret of the WYOMING, showing the flagship NEW MEXICO, at the left, in the Miraflores locks*

# Latest Marine News in Pictures

*SIMON LAKE'S invention, "the salvaging submarine," recently was tested off Bridgeport, Conn. The submersible is operated from the mother ship. Compressed air keeps back the water, while divers step through an open hatchway to their work.*

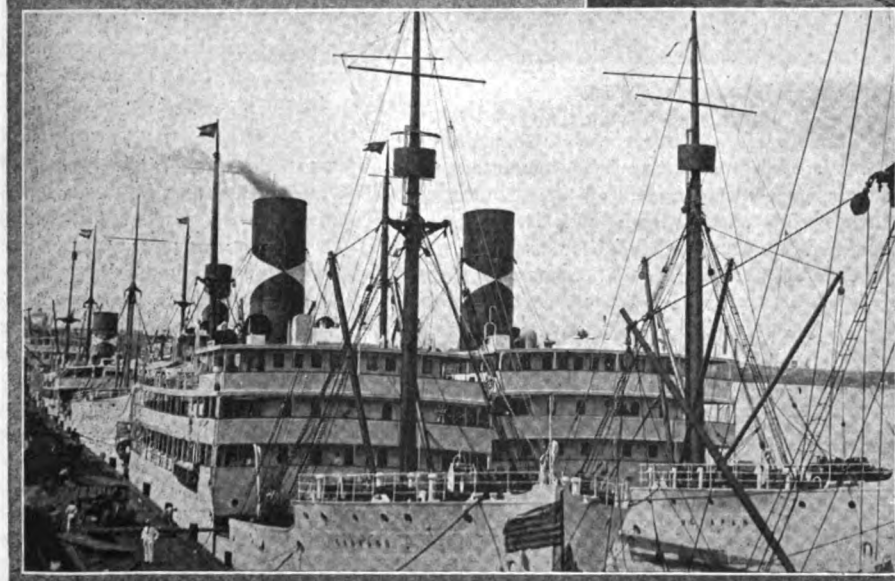


*MEXICO is seeking to modernize her inland water transportation. Curious canoes are now used*



*THREE tanks recently were transported on a scow from Bamberton to Powell River, B. C., 150 miles. The scow was brought up at low tide between two rows of piles on which the tank was placed. As the tide rose the scow loaded itself*

*THE port of New Orleans was never so busy as when the recent strike was settled and scores of ships were released. Here is shown the Girod street docks, with some of the fruit steamers engaged in the Latin-American trade*



# Marine News in a Personal Way

Intimate Gossip About What Leaders in the  
Maritime World Are Doing

**CAPT. C. T. LARSEN** has been appointed port captain and marine superintendent of the Universal Shipping & Trading Co., Seattle. Captain Larsen is a well known deep-water navigator. For many years he commanded the barkentine *Koko Head* for Hind, Rolph & Co. He first served as mate on this vessel and then as master for nine years, making a total of 13 years on the same ship. Later he resigned this command to become master of the *WILLIAM NOTTINGHAM*, a barkentine which subsequently took fire and was destroyed in the Indian ocean. Captain Larsen was born in Norway in 1876. He went to sea when 14 years old. He served as deck boy, ordinary seaman and able seaman before coming aft. When 17 years old he joined the American merchant marine, sailing for a number of years out of Atlantic coast ports. Then he came to the Pacific coast. The *Koko Head* was his first command, at which time he was 31 years old. After the *NOTTINGHAM* was destroyed Captain Larsen took command of the *H. C. HANSEN*, which vessel he left when he assumed his shore duties. One of the first undertakings of Captain Larsen will be the conversion to sailing vessels of several wooden hulls intended for steamers.

**LEWIS T. KAVANAUGH**, Memphis, Tenn., has been appointed manager of the Mississippi-Warrior waterways to succeed **A. W. MACKIE**, who recently resigned.

**FRANKLIN REMINGTON** has been elected chairman of the board of directors of the Foundation Co., New York. Other recently elected officers are **JOHN W. DORY**, president and **H. J. DEUTSCHBEIN**, first vice president and general manager.

**J. L. CANBY** has been appointed district manager of sales at Chicago for the Chicago Pneumatic Tool Co., Chicago. He succeeds **NELSON B. GATCH**, who has been transferred to New York as district manager of sales.

**DANIEL H. COX**, of Cox & Stevens, naval architects, New York, who resigned on the outbreak of the war to

become manager of the ship construction division of the Emergency Fleet corporation has resumed his position as partner of the firm. Other partners recently admitted to the firm are **BRUNO TORNROTH** and **THOMAS C. LANDI**, who have been associated with the firm for a number of years.

**O. H. TAYLOR**, with headquarters at 308 Stuart building, 280 Broadway, New York, recently was appointed New York representative of the Merrill-Stevens Shipbuilding Corp., Jacksonville, Fla. **C. W. HENDLEY** has become purchasing agent at the Jacksonville plant succeed-



CAPT. C. T. LARSEN

ing **H. W. HEBB**, who recently resigned. **W. W. HELVENSTON** has been appointed acting purchasing agent at the South Jacksonville plant. Both Mr. Hendley and Mr. Helvenston have been assistant purchasing agents for the company.

**SERG. PAUL MITCHELL** of the provisional depot, American expeditionary forces, France, has returned to Chicago to resume his duties as traveling representative of the Independent Pneumatic Tool Co., Chicago.

**N. S. BADEN**, former sales manager, has recently been elected vice president

of the Canadian Westinghouse Co., Ltd., Hamilton, Ont. **H. M. BOSTWICK**, who was assistant sales manager, has been made sales manager.

**A. C. RIMMER** has been appointed manager of the New York office of the Northwest Engineering Works, Green Bay, Wis. Mr. Rimmer's office is at room 539, 149 Broadway.

**ALONZO TWEEDALE**, auditor for the District of Columbia, recently resigned his position to become treasurer of the United States Shipping Board Emergency Fleet Corp. Mr. Tweedale was in the employ of the district government for 24 years.

**J. S. CLARK** has been appointed manager of the New Orleans office of Harriss, Magill & Co., recently opened. For many years Mr. Clark was associated with the steamship business in Galveston, Tex. During the war, Mr. Clark was commissioned as captain in the United States army and served overseas in the transportation department.

**EDWARD R. CARDINAL** has been appointed district sales manager of the Tacony Steel Co., Tacony, Pa. Until recently Mr. Cardinal was president of the Cardinal Tool Co., Philadelphia. Previously to that time he was connected with the Carpenter Steel Co.

**DAVID B. SUTTON** has been appointed sales manager of the Thatcher Propeller & Foundry Corp., Albany, N. Y.

**J. WILLIAM PETERSON**, recently elected president and treasurer of the Richardson-Phoenix Co., Milwaukee, announces that **L. E. STROTHMAN** has become vice president and general manager of the company. Mr. Strothman has been connected with the Allis-Chalmers Co. since 1902 and previously to that time with Filler & Stowell Co. and with the Nordberg Mfg. Co. Mr. Strothman has specialized in steam turbine and pumping practice. He is a member of the American Society of Mechanical Engineers, the American Society of Civil Engineers and the American Waterworks association.



# Marine News in a Personal Way

Intimate Gossip About What Leaders in the  
Maritime World Are Doing

**H**ARRY M. GILES has been appointed general superintendent of the South Philadelphia works of the Westinghouse Electric & Mfg. Co. He succeeds the late OSCAR OTTO, who was recently killed in an automobile accident. Mr. Giles was born in Boothbay, Me., in 1869. When a small boy his parents moved to Providence, R. I., where he received his education. He left high school at an early age to begin work in the drafting department of the Corliss Steam Engine Co. While engaged in this work, he took a night course in the Rhode Island School of Design and later received private instruction in mathematics and kinematics. He won rapid promotion as a draftsman and then apprenticed himself in the shops. He became a skilled mechanic and in 1900 was appointed superintendent of corliss engines with the Westinghouse Machine Co., which position he held until that company became a part of the present organization.

\* \* \*

H. K. FOWLER, manager of the Thames & Mersey Marine Insurance Co., Ltd., New York, will retire from active business Dec. 31. Mr. Fowler has been connected with the company for the past 40 years. FRANK H. CAUTY, who was appointed joint manager last July, will succeed Mr. Fowler as manager, while H. W. SPICER has been appointed assistant manager. Mr. Cauty has been in the employ of the company for 34 years. Mr. Spicer is at present a partner of the brokerage firm of Patterson, Wyld & Windeler, Boston. He began his marine insurance career in New York 21 years ago under Mr. Fowler, having previously been in Liverpool at the company's home office. Afterward he was in the service of the New York branch of the Standard Marine Insurance Co. as local underwriter.

\* \* \*

CHARLES R. PAGE, San Francisco, until recently one of the commissioners of the United States shipping board at Washington, has been elected treasurer of the Atlantic, Gulf & West Indies Steamship line. He succeeds ALEXANDER R. NICOL, who has been elected president of the line.

\* \* \*

P. A. S. FRANKLIN JR., son of P. A. S. Franklin, chairman of the International Mercantile Marine Co., has en-

tered the offices of Norton, Lilly & Co., New York. He is in the American-Manchurian line's department.

\* \* \*

WILLIAM MACKELLAR BRITAIN, who for seven years was secretary of the American Steamship association, recently resigned. Mr. Britain announced that he has signed a contract for three years to serve the Baltimore export and import board of trade. He assumed his new duties on Sept. 15. WILLIAM R. GULL, a traffic expert formerly with the Merchants & Miners Transportation Co., is associated with Mr. Britain at Baltimore. Mr. Brit-



HARRY M. GILES

tain was born in Glasgow, Scotland, and received his early education in that city. Early in life, he entered the employ of the Cunard line. Later he came to this country and entered the employ of the Old Dominion Steamship Co. He completed his education in this country, taking a bachelor of arts degree from the College of the City of New York and later took a master's degree in the school of political science at Columbia university. At Baltimore, his work will consist of developing the city's trade possibilities.

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RALSON R. CUNNINGHAM has resumed his duties as manager of the

gas engine department of the Pacific Coast Net & Twine Co., Seattle. Mr. Cunningham volunteered when this country entered the war, enlisting in the 117th engineers.

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DAVID RODGERS, one of the best known active shipbuilders in the United States, has resigned as general manager of the Skinner & Eddy Corp., Seattle, which position he has held successfully since the company began its huge plant there in 1916. Mr. Rodgers is taking a much needed rest as his health demands a respite from active duties. He intends to take a trip to England in the near future and while his name has been associated by rumor with several other yards, he states that he plans an extended vacation. Mr. Rodgers was the recipient of numerous messages of good will from admiring friends in various parts of the country. While at the Skinner & Eddy yard he received a demonstration of friendship from the men which showed the high esteem in which he is held. In making a brief speech to his former employes, he gave the workmen credit for the splendid record made by Skinner & Eddy and modestly said that their loyalty and industry had established the Skinner & Eddy reputation.

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ROBERT BRIGES, a member of the port of Seattle commission since its organization, nine years ago, has resigned his position to return to private life. Mr. Bridges has taken an active part in the upbuilding of that port and he has a knowledge of port facilities and shipping conditions held by few men. While he made numerous enemies through his espousal of matters considered radical, none has ever doubted his honesty and integrity. W. S. LINCOLN, auditor of the port for years, has been elected to succeed Mr. Bridges.

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HUGO ERNST, director and general manager of the Franco Tosi Co., Legnano, Italy, builder of marine engines, is visiting this country to make an exhaustive study of plant efficiency and social welfare work among employes.

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HENRY M. ROBINSON, member of the United States shipping board, has resigned, effective Sept. 15.



## Payne Alters Hurley Ship Plans

(Concluded from page 465)

On Sept. 1, the various operating agents of shipping board vessels are understood on good authority to have had in their possession \$1,500,000 in freight money earned with government ships which they had been unable to turn over to the shipping board. The agents had deposited this money in banks where it earns  $2\frac{1}{2}$  per cent interest for the government against the time when the accounts of the shipping board would consent to converting it into the government funds. According to the original ruling of the accountants, no moneys from any account could be turned over to the shipping board until the account was concluded and closed. Two of the larger of the private shipping companies operating government vessels on allocation are

held to hold in their possession \$150,000,000 each of such government money that they were not permitted to turn in. As early as last January, one of the smaller of the operators collected more than \$500,000 in freight for the government on one charter. A check for this money was tendered the shipping board, but the accountants returned the check and refused to accept the government's money stating that they could not accept any funds until all the vouchers had been received and until the account had been closed. On Sept. 1, the shipping board had 8000 such agency accounts outstanding.

Under the old system of accounting inherited by Chairman Payne, none of these earnings from operations was made to show on the books of the shipping board. This is a situation which Mr. Payne is reputed to have considered carefully and he is said to be desirous of altering it.

## Ask Lower Rates on Steel

**B**UILDERS of fabricated steel ships will be saved fully \$50,000,000 annually if the Philadelphia freight traffic committee of the United States railroad administration decides favorably upon the revision of rules covering the fabrication-in-transit on iron and steel articles. This privilege, now applying to steel for buildings, bridges and tunnels, has been at the rate of 1.5 cents per 100 pounds but under the amended tariffs it would be at 2.5 cents and would not only include ship steel, and that for buildings, bridges and tunnels, but would apply to all iron and steel stopped in transit for certain manufacturing processes. Hearing on the revision of the rules was begun in Philadelphia, Sept. 9, and it may be some time before any action is taken.

The hearing at Philadelphia on the proposed revision of rules governing the fabrication privilege went into the subject by which carload shipments of iron and steel may be forwarded to fabricating points provided in current tariffs for bending, bolting, boring, countersinking, cutting, drilling, painting, planing, punching, reaming, riveting, sawing, shearing and welding. Rolling crimping, burning, forging and chipping are not included. These processes may apply to the following articles: Angles, bars, beams, bolts, castings, channels, columns, ells, girders, masts, plates, nuts, rivets, rods, tees and zees when shipped in the rough.

Steel shipped from the Pittsburgh

district to the Philadelphia district for bridges tunnels and buildings takes a rate of 24.5 cents with an additional charge of 1.5 cents for the fabrication privilege. Similar steel from Pittsburgh to Philadelphia, or the Delaware river shipbuilding district, when intended for ship construction, takes a rate of 40.5 cents. Extension of the fabrication privilege would mean a difference of 14.5 cents per 100 pounds, or from 60 cents to \$4.20 per ton, depending upon the location of the steel mills and the fabricating plants, as regards Delaware river shipyards. North Pacific coast shipbuilders are finding that the question of freight rates on steel is assuming greater importance. They state that if Pacific coast shipbuilders must pay \$1.25 to \$1.37½ a hundred-weight in freight for steel, which adds \$80,000 to the cost of each 8800-ton ship, it will be almost impossible for them to compete with Atlantic coast yards which are in a position to get cheaper rates. Coast shipbuilders want rates equalized. They point out that the overland rate on steel consigned to Oriental common points is but \$1.20. A syndicate committee of Pacific coast shipbuilders conferred recently in Washington with heads of the United States railroad administration on freight rate differentials on steel with the object of obtaining reduced rates. The chambers of commerce of the Pacific coast cities are solidly behind the shipbuilders in their contention for the lower freight rates.

## Merchant Marine Program

The executive committee of the National Merchant Marine association has asked the 55 members of the association council to approve four points for the upbuilding of an American merchant marine, according to William Allen, secretary of the association. Mr. Allen announces that the recommendations which the council would be asked to approve are as follows:

1—Calling of a conference of representatives of all organizations directly interested in shipping, shipbuilding, manufacturing and exporting to agree upon fundamental principles of shipping legislation.

2—Creation of a department of the marine to take over all the duties of the shipping board, except rate regulation, and to which the various marine bureaus of existing government departments shall be transferred.

3—Support of the American bureau of shipping.

4—Establishment of load lines for American vessels.

## Offers Maritime Courses

The Wall street division of New York university has announced a program of 31 courses devoted to financial, commercial and general business affairs. In addition to the courses dealing with banking and financial subjects, a number of other courses have been established which deal with foreign trade, ocean transportation, marine insurance, Far East and South America trade problems, commercial Spanish and conversational Chinese.

## Will Exhibit Cranes

A standardized electric crane as applied to foundry practice will be exhibited by the Chesapeake Iron Works, Baltimore, at the convention of the American Foundrymen's association to be held in Philadelphia Sept. 29 to Oct. 4. In less than one and a half years, during the war, the company built over 140 large electric traveling cranes which were shipped to France and various points of the United States. The company points out that with its cranes a pattern can be lifted out of a flask and manipulated easily.

The American motorship SANTA CRISTINA, with Capt. R. C. Lechner in charge, sank off the Cuban coast recently following an explosion in her engine room. Apparently she is a total loss, with the 2000 tons of lumber and leather she was bringing from Baranquilla for New Orleans. The 29 men of the crew and five passengers were saved by a Cuban schooner.

# Hinders Use of N. Y. Barge Canal

Operation of Federal Railroad Administration on the New York State Barge Canal Retards Expansion by Private Operators

**N**EW YORK'S expensive state barge canal has proved of greater benefit to the traffic passing through the state than to purely intrastate traffic. This waterways system, which cost the state \$175,000,000 to build, is consequently giving its benefits to the middle west and the export trade. Since the state assesses no charge for operating on the canal, the benefits to national commerce contributed by the state can readily be seen.

The state merely collects a terminal charge against the barge lines using those terminals. A wharfage of 30 cents a day against a boat light, and 50 cents a day against a barge loaded, is collected. The state is now equipping the terminals in the harbor of New York with sheds, cranes, etc., and when these are completed it is planned to assess in addition a top wharfage charge. These are the only sources of revenue which the state retains with which to meet the interest on the investment and the daily operating cost of the canal.

Up to the last week in July less than 50,000 tons of coal had been carried through the canal this season, notwithstanding the increased demand for coal, and the car shortage on the railroads. The demand for coal in New York is not only local but export agents have been combing the country for some tonnage to ship to South America and Europe. The opportunities have been unprecedented, but this light movement has been due to the lack of floating equipment. There is but one private operator of barges who can move any great tonnage, but the private operators insist that they cannot do much in competition with the government-owned line. The independent boatmen control about 200 boats

which are operated under a towing service provided by the state. While there are only four operators who control or own fleets on the canal there are many individuals who have been providing a service during the past season. According to an estimate made by the superintendent of public works, the waterway carried 458,310 tons of cargo this season to the first week in August. That total represents an increase of approximately 100,000 tons over the corresponding period of last year.

Canal rates are variable and are made to meet conditions obtaining at the time the cargo is offered. Class rates, however, have been published in tariff form by the railroad administration, and the New York-Buffalo canal rate is 10 cents first class and 3 cents sixth class under the all-rail rate. Rates are also published from New England points via rail-canal-and-lake to western territory which are 20 cents first class and 6 cents sixth class under the standard rail rate. As descriptive of bulk cargo rates, independent boatmen have been carrying pig iron and steel articles from Buffalo to New York at a rate of \$2.65 per gross ton. The wheat rate has been \$4.33 per 100 weight for export. Rye, corn and barley rates have been the same. Generally speaking, the rates on bulk cargo in

boatload quantities have been from 30 to 40 per cent less than the rail rate.

Due to the fact that the government is operating the largest of the fleets as well as the railroads, some state public officials have become apprehensive and are pointing out that whereas it was intended to forbid the railroads the use of the canal so as to bring about a water competition with the rail lines, the practical effect of what is now being done is to nullify this intent entirely. There has also been considerable disappointment over the light movement of grain, but the private operators say that it is not profitable for them to move rye and similar grain and that they prefer to take the heavy cargoes upon which a more profitable return is earned.

Edward S. Walsh, state superintendent of public works, declared that the conditions obtaining this season, which have so far prohibited the waterway carrying its share of the grain traffic, might have been overcome if adequate state-owned grain elevators had been available in New York and Buffalo. Bulky freight of all kinds can be moved to advantage on the canal but it will require the initiative of business men, and particularly those of New York and Buffalo, to get the canal started properly. The return of the rail-

roads to private control will, of course, help the situation and make possible the realization of some of the earlier plans. However, there will remain a predominatingly strong canal fleet under government ownership and operation which will continue a specter to private undertakings along this line. On the first of August, the New York New Jersey canals section of the railroad ad-



EIGHT 150-FOOT STEEL CANAL BARGES MOORED IN BUFFALO HARBOR—THESE VESSELS WERE BUILT FOR THE RAILROAD ADMINISTRATION



ministration was operating 48 steel, 14 concrete and three wooden barges on the New York state canal between Buffalo and New York. At that time, three more steel and seven concrete barges were under contract for these operators. They owned five tugs for towing the barges through the canal and were operating 10 other tugs under charter. This comprised the greater of the four fleets which operated this year.

The wooden barges are 90 feet long and have a carrying capacity of about 500 tons. The concrete barges, which were designed and built by the Emergency Fleet corporation, are larger but have a carrying capacity not much greater. The steel barges were not delivered until the spring of 1919. They were specially designed for operation on the canal. They are 150 feet long, 20 feet wide and 12 feet deep. When loaded to 8½ feet they have a carrying capacity of 650 tons, but it was not the practice to load them to capacity during the past summer. They normally carried about 450 tons each.

#### Designs Power Barges

For this section of the railroad administration, the architect firm of Cox & Stevens, New York, has designed 20 steel steamers. These are barges with a power plant. These vessels are to have the same dimensions as the new steel barges but their carrying capacity will be limited by the space taken up by the engine. When loaded to capacity, however, they will be able to carry 450 tons. The operators expect to run these steamers in connection with the barges. One steamer will push one barge and

pull two others. They will carry a crew of 16 men, whereas a barge has a crew of but two men. These crews will have federal papers and, therefore, when a fleet reaches Waterfront, where the canal empties into the Hudson river, they will be able to come directly to the terminals in the harbor of New York without waiting for a transfer.

Traffic has been moved on these barges at a rate approximately 2 cents per 100 pounds less than the rail charge. Despite the fact that the year 1919 is the first full season that the canal lines have been in operation, a fair amount of traffic has been developed. The eastbound movement has consisted of oil cake, copper, pig iron, grain and a little flour. The total westbound movement is said to have been fair. The eastbound movement has been sporadic. It is to be expected that the eastbound movement will be light between June 15 and Sept. 1. In the early spring and the late fall, the greater benefits will be derived from the use of the canal. During the winter it is impossible to operate. The last boat leaves New York on Nov. 1 so as to reach Buffalo by Nov. 15. The last boat must leave Buffalo Nov. 15 so as to reach New York by Dec. 1. During the season of 1918, it was possible to operate a boat out of Buffalo eastbound as late as Nov. 20, but that condition was considered exceptional.

It requires probably 10 days to traverse the canal whereas the railroads are able to make the distance in about three days. The New York & Western Canal line says that it can traverse the distance in nine days. This line, however, has smaller barges.

Their carrying capacity is about 250 tons each, and they can be towed in groups of four, six and sometimes eight barges. The line states its freight rates are 25 per cent below the rail rates. When the line does not have tugs of its own, the state will tow, charging 35 cents a mile when the tow is loaded and 30 cents per mile when light. The New York & Western has had an eastbound movement consisting probably 70 per cent of grain, the remainder being salt, soda ash and pig iron. Its westbound movement has consisted of sand, clay, stone, bulk and miscellaneous cargoes. It has moved some sugar. The Shippers Navigation Co., the largest of the independent lines on the canal, operates 45 barges. The General Electric Co. is the only other operator using the canal, but its barges are used for company work exclusively between Schenectady and New York City.

#### Operates 42 Vessels

The Shippers Navigation Co., the most powerful of the private lines operating on the barge canal, owns 33 barges and nine steamer barges. These latter are the old type of steam canaler 100 feet long, 17½ feet beam and about 10 feet deep. They draw 8 feet of water, but their cargo carrying capacity is limited to 150 gross tons. These steamers carry a crew of five men, who having a federal license, can bring their tows down into the harbor of New York from Waterfront. Their barges have the same dimensions, but being without a propulsion plant have a carrying capacity of from 300 to 325 tons each. This line purchased the equip-



GOVERNMENT OPERATED BARGES LEAVING TONAWANDA, N. Y., ON THE NEW YORK STATE BARGE CANAL—THEY ARE BOUND FOR NEW YORK CITY WITH MIDDLE WESTERN PRODUCTS





RAILROAD ADMINISTRATION TUG LIBERTY USED BY THE COWLES TOWING LINE—THIS CRAFT HAS AN UNUSUALLY SHORT STACK TO ENABLE HER TO PASS UNDER BRIDGES

ment of the old Follette line, and many of their boats are only three years old. It has in mind the construction of additions to its floating equipment but is not ready as yet to embark upon that extension.

The Shippers line uses its steamers for power, pushing one and pulling four barges. Such a fleet makes a full lockage. Only when it is necessary to drop a barge off at an intermediate point for receiving or discharging freight does the line make use of the state towing facilities. This line has joint rates and through traffic privileges with the Great Lakes Transit Co., Lehigh Valley Transportation Co., Detroit & Cleveland and the Cleveland & Buffalo lines over the lakes. It has similar through traffic agreements with the Clyde, Mallory, Morgan and other coastwise lines on the Atlantic.

The through rates via the Shippers line on grain and grain products are approximately 20 per cent below the rail rates. When a full barge-load of pig iron, or other commodities, is taken at Buffalo or New York for a strictly canal trip a special rate is quoted which is said to be much less than 20 per cent below the rail rate. The westbound traffic has not been as heavy as the eastbound, but it is understood to have been profitable. It is said that every fleet leaving New York during the season of 1919 has had a full cargo awaiting it at Buffalo for the eastbound movement. The line has not carried much grain. Its chief movement has consisted of iron, steel and salt.

Beginning about July 15, 1919, the canal lines were offered more east-bound traffic than they could accept.

At that time a movement was started to clear the elevators at Buffalo to prepare for the receipt over the Great Lakes of the great grain crop to be harvested this fall. The railroads shut off the movement of grain and agreed to accept shipments of wheat only. The canal line owned by the railroad administration was compelled to reject a shipment of about 750,000 tons of grain in one day.

The independent lines insist that it will be impossible to do a prosperous business so long as the railroad administration is permitted to operate on the canal. Under the state charter for building the canal, it is provided that its facilities shall be closed to the railroads, but open free of charge to independent barge lines. When the canal was opened for traffic, however, the war was on and no prospects were in sight for making practical use of it. The state appealed to the federal government with the ultimate result that orders were issued to build barges and tugs. This work was done under the shipping board, and the operation left to a body known as the New York and New Jersey canal section. While this section had no connection with the railroads as such, it has been under the direction and supervision of the railroad administration. Technically, it may be claimed, the railroads are not now operating on the canal, but for practical purposes the independent lines consider it otherwise.

Terminals built by the state at Buffalo and New York are offered to the barge lines operating on the canal. Piers 5 and 6, at the lower end of Manhattan have about been completed

for this purpose and the space divided between the three independent lines. The railroad administration, however, resented the manner of the division of the pier space and rented a part of Pier 7, Manhattan, from the Erie railroad. These latter operators insist that the pier space should be apportioned in accordance with the number of barges operated and not equally among each line.

With the prospects of a big grain movement this fall, the barge lines find themselves hampered by the lack of proper terminal facilities in the harbor of New York. It is said that had New York elevator facilities at all compared with the elevator facilities at Buffalo the traffic would be greatly facilitated, the rates be kept down to a minimum, and all the lines would make money. The barges, however, are often held for long periods of time and transfers from pier to pier are made in some cases as often as three times. Due to the inadequate terminal facilities, the barge lines have been compelled to adopt demurrage rules similar to those of the railroads. They allow free time of 10 days on export shipments and two days free on domestic shipments. The operators are of the opinion that had the harbor of New York proper elevator facilities to store grain as it is received, they could save one round trip for each barge in the period of two months.

The barge lines were compelled to receive and deliver over an uncovered pier at Pier 5 for a long time this past summer. But this pier was equipped with two auto-cranes. Work was rushed on Pier 6 with the expectation of completing it before fall.

Cranes for this pier were ordered early but their installation was delayed.

Other benefits are expected from the state canal aside from the through traffic passing east and west through New York and Buffalo. Some benefits are expected to be derived by the commercial and industrial sections on the route of the canal itself. There has been much criticism of the fact that these centers have not availed themselves more fully of the existing facilities. The General Electric Co. is the only operator of a barge line to that point, and its barges are for company use exclusively.

### Canal is Dependable

The claim has been made that deliveries can be made over the canal in a shorter time than by rail, but that requires explanation. Rail shipments between New York and Buffalo are possible in three days, but that is not generally the case. Delays to cars are frequent and a delivery may not be made within five days and sometimes two weeks or a month goes by before the car is received at its destination. There is no such possibility of losing a shipment en route on the canal, and its dependability rather than its speed should lend itself to future development of traffic.

Conditions during the war were abnormal, and conditions during the season of 1919 did not afford an adequate test of the canal. For instance, sugar has been scarce and purchases have been in small lots for quick delivery. The merchant buyer was not so considerate of saving 2 cents per 100 pounds on the shipment; he was more concerned with an quick delivery. That is a situation which will not exist for all time and by patient effort merchandise traffic over the canal should grow in the future. But if merchandise traffic is to be stimulated the terminal problem in the harbor of New York must be given further consideration. The terminals offered by the state in New York are not ideally located for the grocery trade or for the merchandise trade. If deliveries and receipts could be had at a point on the Brooklyn shore or near East Forty-second street, Manhattan, this kind of traffic would be served better. As the barge line operators point out, it is unwise to ship by canal to or from New York if it is necessary to truck the goods 15 or 20 miles within the city limits.

Private operators find that it is expensive to build new floating equipment and they have, therefore, no intention of undertaking anything

along this line at present. The government, through the railroad administration, however, is going ahead with the building program set down last year. These barges are described on page 461.

Operators are not unanimous in their opinions as regards the economics that may be expected from the altered sizes of canal boats. The 150-foot barge built for the government, is capable of transporting a larger unit of cargo, with practically no increased cost of operating en route. On the other hand, a barge of this size, is unwieldy in the slip; provided at the terminals. A smaller barge, some of the private operators claim, can be handled much more easily and less expense will be attached when a particular cargo is to be split for delivery at different piers. The terminal expense, it would appear, is the one factor in the present situation which canal operators are striving to keep down. During 1918 and 1919 this part of the cost has been larger than the traffic at times warranted. It is a situation, however, which will be greatly alleviated when the canal fleets grow in size and the movement of traffic is in such a volume as to warrant a more orderly system of transfer.

## Compiles Living Cost Data

The bureau of statistics, United States department of labor, recently compiled some interesting data on the changes in living costs in shipbuilding centers. The following table gives the percentage of increase from Dec. 14, 1914, to June, 1919, inclusive, for 19 shipbuilding centers on the Atlantic, Gulf and Pacific coasts and the Great Lakes.

	Per Cent
Portland, Me. ....	74.25
Boston .....	72.78
New York .....	79.22
Philadelphia .....	76.21
Baltimore .....	83.99
Norfolk, Va. ....	87.05
Savannah, Ga. ....	79.76
Jacksonville, Fla. ....	77.48
Mobile, Ala. ....	76.64
Houston, Tex. ....	80.22
Portland, Oreg. ....	69.16
Seattle .....	71.01
Los Angeles .....	65.97
San Francisco .....	65.58
Oakland, Cal. ....	65.58
Chicago .....	71.47
Cleveland .....	77.23
Buffalo .....	84.23
Detroit .....	84.36

## To Take Kerr Steamships

Edward F. Geer, president of the American Ship & Commerce Navigation Corp., announced recently that this company will take over the steamships of the present Kerr Navigation Corp. Its name will be changed to the Kerr Navigation Corp. as soon as the present Kerr company can be dissolved. It has

an authorized issue of 40,000 shares of class A stock limited to \$7 per share dividends, but without voting rights, and 150,000 shares of class B stock, carrying voting power. Both classes of stock are without nominal or par value.

The American Ship & Commerce Corp., the announcement said, will acquire 76,000 shares, a controlling interest, of B stock, for \$7,600,000 cash. The 40,000 shares of A stock and 36,000 shares of B stock will be delivered to the present Kerr Navigation Corp. for its steamships, aggregating 51,000 deadweight tons, and which have an appraised valuation in excess of \$9,000,000, franchises, good will and earnings of steamers from Jan. 1, 1919.

## New Shipping Firms

New shipping companies organized during August comprise 19 concerns with an aggregate capital of \$55,950,000, according to the *New York Journal of Commerce*. This is the highest total for any one month since June, 1917. The number of concerns launched was smaller by six than in July but the indicated investment represented an increase from \$42,485,000. The following table gives the capitalization of the new firms incorporated during August and July:

### AUGUST, 1919

Alabama Docks Co., Ala. ....	\$ 100,000
Boston Pacific Co., Del. ....	30,000,000
Carnar Dock Corp., Del. ....	500,000
Chartered Shipping Co., N. Y. ....	250,000
Fidelity Steamship Co., Mass. ....	2,000,000
Green Star Steamship Corp., Del. ....	10,000,000
Highlands Navigation Corp., N. Y. ....	250,000
Island Steamship Co., N. J. (navigate) ..	900,000
Inter-Republic Navigation Co., Me. (transportation) ..	1,000,000
New York & Argentine Steamship Co., Del. ....	250,000
Orinoco Steamship Corp., Del. ....	2,300,000
Orlean Steamship Corp., Del. ....	1,750,000
Provident Steamship Co., Del. (conduct shipping business) ..	200,000
Phyll's Navigation Co., N. Y. ....	300,000
Polska Korporacya Okretowa (Polish Ship Corp.), Del. ....	1,000,000
Pennsylvania Shipyards Corp., N. J. ....	4,000,000
Redondo Steamship Co., N. Y. ....	500,000
Tampa Inter-Ocean Steamship Co., Fla. ....	300,000
Vanguard Shipping Corp., Cal. ....	350,000
<b>Total .....</b>	<b>\$55,950,000</b>

### JULY, 1919

Admiral Steamship Corp., N. Y. ....	\$ 50,000
Adelphi Steamship Corp., N. Y. ....	100,000
Black Star Line, Inc., Del. ....	500,000
Ballymena Co., Inc., Del. ....	100,000
Belen Quezada Motor Ship Co., Del. ....	200,000
Bianca Shipping Corp., N. Y. ....	110,000
Cleveland-Erieau Steamship Co., N. Y. ....	425,000
Davenport, Alice May, Transportation Co., Del. ....	100,000
Dominion & States Steamship Corp., Del. ....	500,000
Elk Steamship Co., N. Y. ....	500,000
Fraser, Bace & Clarke Dry Dock Corp., N. Y. ....	1,200,000
Greater New York Ship Service Corp., N. J. ....	100,000
Interstate Navigation Co., Del. ....	500,000
Interocean Navigation Co., N. Y. ....	100,000
Job Shipyard Corp., Me. ....	50,000
Lassell Steamship Co., Del. ....	250,000
Marine Equipment Corp., Del. ....	300,000
New England Maritime Corp., N. Y. ....	400,000
Pacific Concrete Shipbuilding Corp., Del. ....	500,000
South Atlantic Dry Dock Co., Del. ....	1,000,000
States Marine Co., Del. ....	100,000
Steamship Susana Corp., Del. ....	700,000
Tri-State Steamship Co., Del. ....	5,000,000
Wolvin Line Co., The, Del. ....	30,000,000
Wilson Shipping Corp., Del. ....	200,000
<b>Total .....</b>	<b>\$42,485,000</b>



# Army Base Has Modern Cranes

Electric Operation, Safety Devices and Adequate Lifting Capacity are Features of Hoisting Units Installed at the United States Army Base, Boston

**F**OR loading and unloading material at tidewater, the United States army supply base, Boston, is to be equipped with four semiportal bridge-type hoist cranes. The first of the cranes is now in operation while the other three will be installed in the near future. The cranes are a product of the Wellman-Seaver-Morgan Co., Cleveland.

This type of crane carries a lifting boom operated from a carriage, which in turn is mounted on a semiportal bridge and arranged to rotate about a fixed axis. The bridge runs on two rails, one located near the face of the wharf and the other supported on brackets carried on the side of the wharf shed. The crane has four distinct motions: Bridge travel along the wharf, trolley slewing, boom hoisting or luffing and load hoisting. All of these motions are under the control of the operator located in the cab on the rotating carriage.

The crane is designed so that another drum can be added and a 2-rope grab bucket operated. The crane is rated to handle 8000 pounds at a distance of 29 feet from the face of the capsill at the rate of 200 feet per minute and 5000 pounds at a distance of 52 feet at 250 feet per minute. It will, however, take care of occasional loads of 8000 pounds at 52 feet from the center of rotation.

The principal dimensions of the crane are as follows: Horizontal span, center to center of runway rails, 26 feet 5 inches; maximum reach of boom from face to capsill, 44 feet; minimum radius of boom, 29 feet. The angle through which boom may be slewed equals 360 degrees while the concrete counterweight required is approximately 3 cubic yards. The various motions of the crane have approximately the following speeds under full load: Hoist, 5000 pounds, 250 feet per minute; hoist, 8000 pounds, 200 feet per minute;

boom hoisting or luffing, 125 feet per minute; slewing, two rotations per minute with 5000 pounds load at a maximum radius. The bridge travel along the wharf is 200 feet per minute. The mechanism is so arranged that the motion of either hoisting or luffing can be operated simultaneously with both rotating and traveling motions.

The semiportal bridge supporting the operating mechanism was designed in accordance with the general specifications for steel railway bridges issued in 1910 by the American Railway Engineering association, 100 per cent being added to all live loads to allow for impact. In designing this structure, ample allowance had to be made for the swaying of the load. A steel casting is bolted to the deck of the semiportal for supporting the revolving superstructure. This casting has a track plate and a circular rack, which is bolted to the outside for the slewing motion. Concentric with this casting, is a hollow center pivot pin, the lower end of which is securely held by cross framing between the main girders of the semiportal. A portion of the deck not covered by the casting is covered with steel plate. Hand railings are provided along the sides and outside edges of the deck and a steel ladder is attached to one of the legs to give access from the wharf.

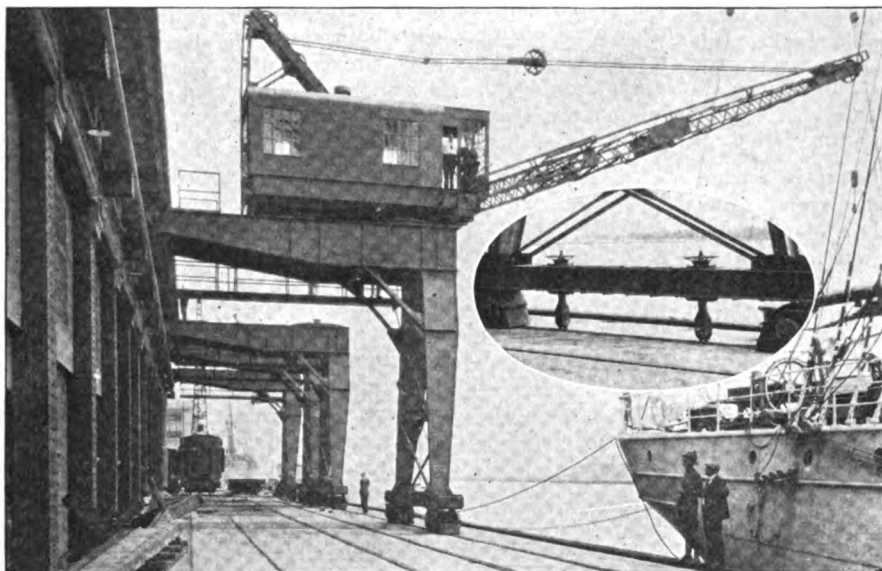
Each leg on the wharf side is carried on two wheels which are driven through the necessary spur and bevel

gearing by the traveling motor. Each pair of wheels is equalized for the proper distribution of load. On the shed rail, the frame is supported by two wheels, one at each corner. These track wheels are double flanged, high carbon, cast steel, of ample size to carry a maximum load. The flanges of the wheels running on the shed rails are placed to give about a 7-inch tread. Wheels running on the wharf rail have the flanges spaced to allow proper clearance for the head of the rail upon which they run.

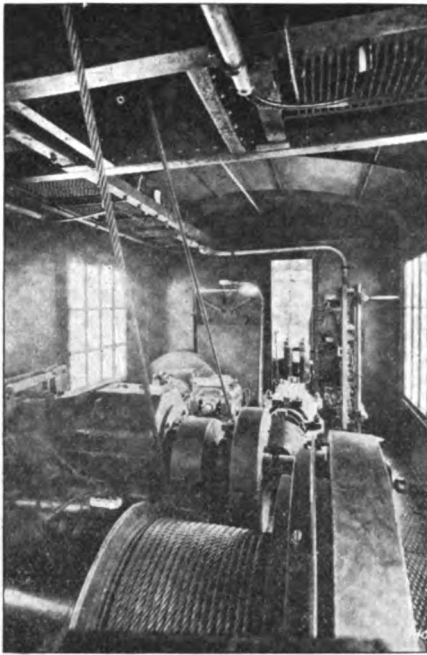
The base frame is made up of rolled steel shapes and plates, braced in all directions. The revolving superstructure is carried on six steel rollers or wheels, four in front where the heaviest load occurs, and two on the back. The front rollers are carried in a pair of steel equalizers. These rollers or wheels are steel. They rotate on roller bearings and are placed so as to run properly on a circular track of 5-foot radius about a pivot pin. A babbitted casting, free to rotate about the center pivot pin, is attached to the base frame to hold the crane concentric with the center pivot pin and to transmit longitudinal and overturning loads from the revolving superstructure to the semiportal.

The center pivot pin is made of a hollow steel casting to permit the threading of conductors through its center to the collector rings on top. The crane is designed so that under

normal operating conditions, with a 5000-pound hook load at the maximum radius, no appreciable load will be thrown on the center pin. It is, however, designed to transmit any possible vertical or horizontal load from the revolving jib crane to the semiportal bridge without cramping or binding in any part. The jib and main frame is made of steel plates and shapes, stiffened in all directions. The frame is designed



SEMIPORTAL WHARF CRANE WITH BOOM IN LOWEST POSITION—THE SMALL ILLUSTRATION SHOWS THE TYPE OF RAIL CLAMP USED



INTERIOR OF MACHINERY HOUSE LOOKING TOWARD THE OPERATOR'S CAB

to support the jib, counterweight, machinery, electrical equipment and operator's house. A steel ladder is provided on the jib to provide access to the sheaves and other parts.

The counterweight is made of concrete blocks in such shapes and sizes that they can be readily handled in case it is desired to dismantle the crane.

The cab is composed of a steel framework covered with sheet steel. It contains the main part of the hoisting, luffing and rotating mechanisms. The control of all motions is so located that the operator has an unobstructed view of the load at all times.

The hoisting and lowering mechanism includes a winding drum, driven through a jaw clutch and a train of spur gearing by a motor equipped with a solenoid brake, and necessary control apparatus and miscellaneous parts.

#### Boom Luffed by Worm Drive

The luffing of the boom is accomplished by a worm-driven drum operated by the hoisting motor through a jaw clutch and gearing so arranged that the boom can be raised or lowered at the convenience of the operator. The pitch of the worm is such that no mechanical brakes are required to prevent the load from lowering but, as an additional safety, a pawl is provided to lock the luffing drum in any desired position.

The slewing is accomplished by means of a motor operated through a train of spur and bevel gearing and a pinion meshing with the master gear attached to the semiportal bridge. A powerful foot brake is provided on

this mechanism, having a latch by means of which the brake can be locked for any desired fixed position of the revolving superstructure.

A motor for traveling the bridge is mounted on one of the girders of the semiportal bridge. This motor is connected to the driven track wheels through spur and bevel gearing and line shafting. One truck on the wharf rail is driven and one wheel on the shed rail. A solenoid brake is mounted on the armature shaft extension. Control apparatus for traveling is located in the operator's house. Electrical connections between the conductors on the semiportal bridge and on the revolving superstructure are made through collector rings mounted on the center pivot pin or an extension. In addition to the solenoid brake, hand operated rail clamps are provided which clamp the wharf rail to hold the bridge in any fixed position. The winding drum for the hoisting mechanism is cast iron with turned grooves to fit the rope.

The electrical equipment is designed for a direct current of 230 volts. The motors, controllers and magnetic brakes are General Electric Co. type. The motors are of the following horsepower: Main hoist and luffing, 65; slewing, 15; bridge travel, 24.

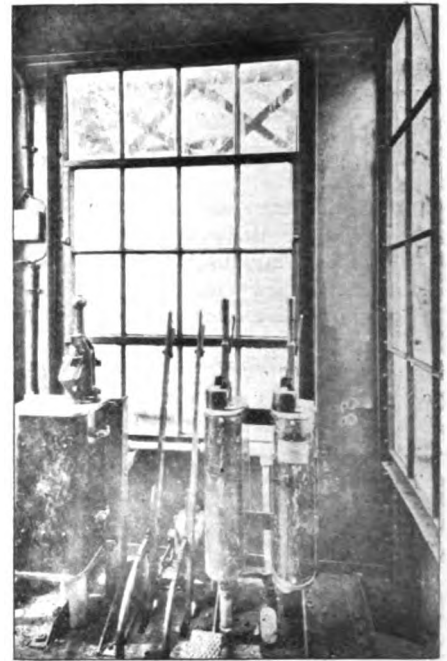
The controller for the hoist and luffing motor is of the reversing magnetic switch, dynamic braking type, consisting of a control panel, heavy duty cast grid resistor and a vertical handle master controller.

#### Has Safety Switch

In connection with the clutch shifting lever which engages the hoist and luffing gearings with the driving motor, an interlocking, mechanically operated switch is provided. When the clutch shifting lever is in central or neutral position, with both clutches disengaged, this switch prevents the operation of the motor. In other words, the function of this switch is to prevent the starting of the hoist motor without any load.

The slewing motor is controlled by a magnetic switch reversing plugging controller, consisting of a control panel, heavy duty, cast grid resistor and a vertical handle master controller. The plugging feature incorporated allows the motor to be reversed from full speed in one direction to full speed in the opposite direction without exerting over approximately 180 per cent full load torque.

The bridge motor control is of the magnetic switch reversing type with shunted armature points and consists of a control panel, heavy duty, cast grid resistor and a vertical handle master controller. The



INTERIOR OF OPERATOR'S CAB SHOWING ARRANGEMENT OF CONTROL LEVERS

shunting points allow slow bridge speeds and also permit accurate control in case a favorable wind may help the motor in traveling, which would ordinarily give an excessive speed. All controllers are equipped with series relays for accelerating the motors.

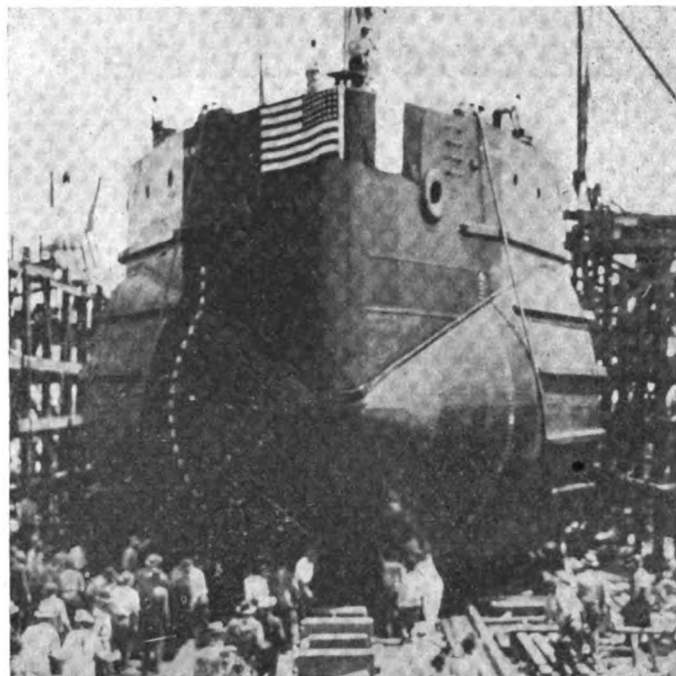
Ample provision is made for the protection of workmen. Guards extending down close to the rails and forming part of the truck brackets are placed in front of track wheels. All gears are enclosed. Ladders and platforms are provided for access to mechanical parts of the crane which are subject to inspection and repairs. Hand railings are provided around all platforms. Sheaves are provided with tight fitting guards where necessary. A limit switch is provided to prevent over travel in the hoisting direction on the main hoist motion. A pressed steel foot gong is provided in the operator's cab for signaling purposes. There is a mechanical gong on the bridge motion. This gong will ring continuously. Roller bearings are used throughout the crane for the different motor driven units.

#### Safety Council Meets

The National Safety council will hold its eighth annual safety congress in Cleveland, Oct. 1-4. Among the problems for discussion are labor unrest, increasing plant efficiency and production, decreasing manufacturing costs and other subjects pertaining to labor management. Four general sessions have been arranged, one of which will be devoted to marine and navigation problems.

# Launches Non-Sinkable Ship

BY H. H. DUNN



All ready to take the water—GAUCHY, a nonsinkable steel ship built for the French government

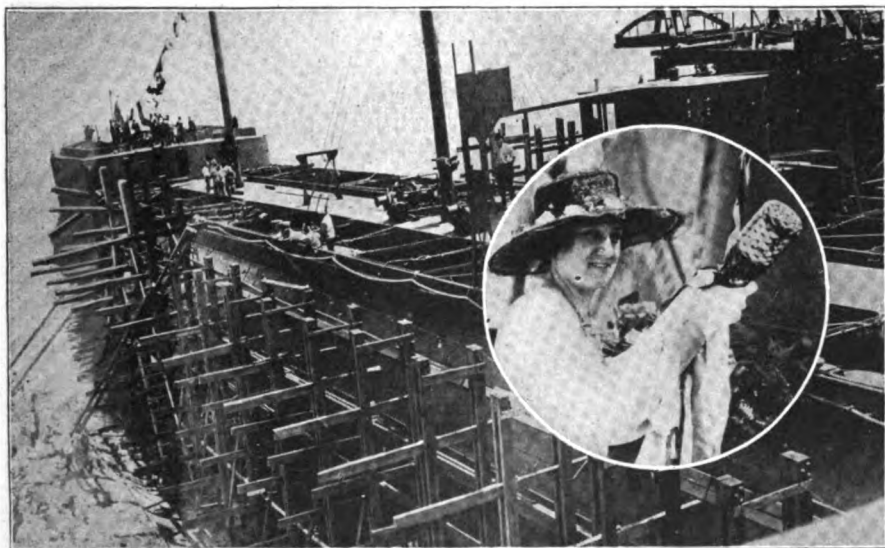
**T**HE Foundation Co. has completed the first of the five 9000-ton, nonsinkable steel freighters of the LeParmentiere type, it is building for the French government. The launching, which was scheduled for Sept. 10, was not a success, however, owing to a sudden drop of 2 feet in the tide in the Industrial canal, New Orleans, into which the attempted launching was made. About 1000 persons, including Mayor Martin Behrman, of New Orleans, Consul General Barret, of France, Gov. R. G. Pleasant, of Louisiana, Lieut. O. G. Villion, representative of the French high commission at the Foundation Co. plant, and a number of other prominent men, attended the launching, over which C. A.

D. Bayley, vice president of the Foundation Co. presided.

Mme. Georges LeGrande christened, with real wine, the hull as it started a few feet toward the water, and named it GAUCHY, but hardly had she finished her few words, when the stern struck in the mud, the bow remaining high and dry on the land. Divers were in the canal inspecting the grounded stern before the sponsor had left her stand. Shipbuilders and naval officials estimate that it will require at least three weeks' work by a dredge to clear a channel in the canal deep enough to float the hull. This is the first launching into the \$25,000,000 Industrial canal, and when the hull is completely in the water, it will be outfitted at the yard and then

taken around through Bayou Bienville, Lake Borgne, Mississippi sound, and thence 110 miles back up the Mississippi river to New Orleans—provided there is water enough in the bayou and the lake to float her.

The GAUCHY is 328 feet 4½ inches long over all, and her hull consists of two cigar-shaped steel cylinders, brought together at bow and stern, each cylinder 21 feet 10½ inches in diameter. Her beam is 47 feet 6 inches, and the space in the steel structure between the cylinders is devoted to storage of fuel oil. She has twin screws, driven by two 700-horsepower steam engines, one in each hull cylinder and each separately connected to one screw, two boilers supplying the steam. Her speed, loaded, is guaranteed 8 knots. The capacity of both cylinders, in which the cargo is stored, is 170,554 cubic feet. Her draft is 17 feet 1¾ inches. She carries a bridge amidships, raised forecastle, raised poop deck, three steel masts, four cargo booms and two steam winches. Closeup, she looks more like an exaggerated whaleback than any other type of vessel. According to Lieutenant Villion, the French government will cease construction of this type of vessel with the completion of the five now under way.



THE GAUCHY AS SHE APPEARED AFTER HER UNFORTUNATE PLUNGE—THE SMALL ILLUSTRATION IS OF HER SPONSOR, MME. GEORGES LE GRANDE

The 10,000-ton drydock being constructed by the Jahncke Navigation Co. at New Orleans, will be ready for use by the end of September. The dock is badly needed as during July and August 12 ships were sent away from New Orleans for repairs, owing to lack of docking facilities.

# Practical Ideas for the Engineer

Moving a Coal Bridge—Makes Quick Repairs—Square Masts—Machining Propellers — System of Dry Lock — Setting Valves — Drilling Square Holes

**T**WO developments in marine engineering, resulting from the war, were discussed at a recent meeting of the North-East Coast Institution of Engineers and Shipbuilders at Newcastle, England. The increased use of speed reduction gearing in turbine installations has brought about some remarkable changes. For the first time in maritime history, it was stated, 20,000 shaft horsepower passed through one set of gearing on the cruiser *CHAMPION*, which is said to be a marked advancement in marine engineering practice.

High efficiency was also attained in speed trials before putting ships in commission. High-powered vessels, during the war, went to sea after basin trials without exhaustive preliminary tests. The cruiser *COURAGEOUS* was gradually worked up to approximately one-third of full power and after an interval of 2½ hours the designed full power was exceeded.

The *RESOLUTION*, after her basin trial, steamed straight out in the North sea, got up full power in an hour and ran at full speed until late in the afternoon when the order was passed to slow down. The destroyer *WATERHEN* obtained full power in less than two hours, while the destroyer *NONSUCH* was raised to full power in less than seven minutes from the time she left the dock. Freedom from breakdowns

were said to be characteristic of the majority of trials made under emergency conditions.

## Moving a Coal Bridge

An interesting scheme for moving the dock end of a coal handling tower is found at the yards of the Kennebec Wharf & Coal Co., Bath, Me. The bridge is a standard steel frame coal handling bridge built by the McMyler-Interstate Co., Cleveland. As originally designed the A-frame and engine room were provided with means for propelling the shore end of the bridge up and down the long track which lines the outer edge of the stockpiles. The light dock end of the bridge, however, had no means of self-propulsion and it was necessary in order to move the bridge from one place to another to get several men with crowbars to move this part of the bridge while the engine moved the other end. Recently, the engineer in charge of the bridge bought a second hand, 18-horsepower marine engine which he mounted on a platform fastened just above the wheels of the truck at the dock end. He then bolted a sprocket to one of the wheels and by means of a chain drive is enabled to move this outer

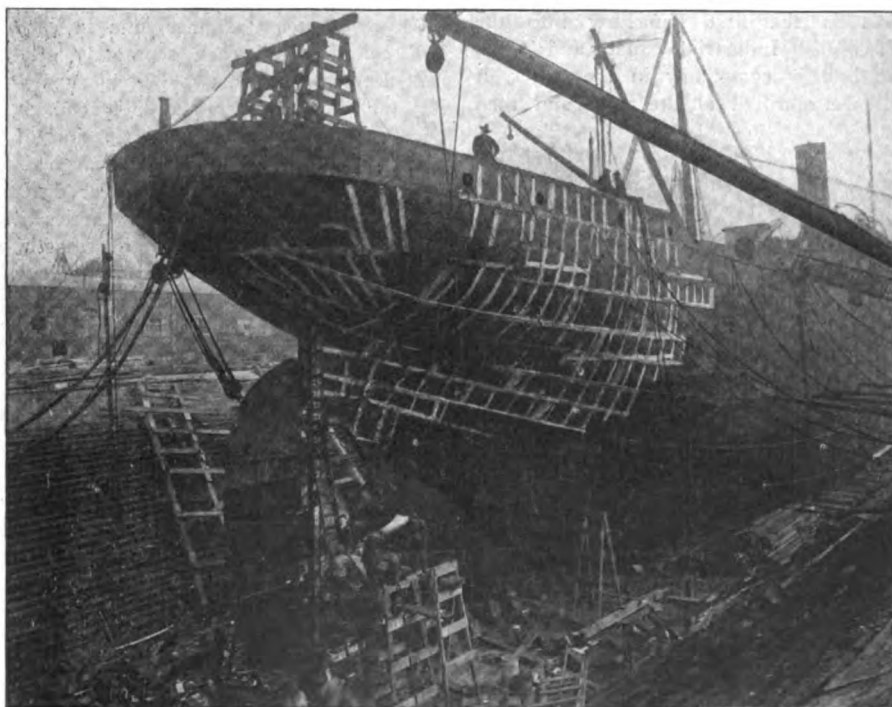
bridge end in conjunction with the movement of the A-frame end without extra labor and with entire satisfaction. A 2-inch pipe carries the steam from the engine room to the top of the tower and from there a 1.5-inch pipe runs to the outer end of the bridge and down to the 18-horsepower engine.

## Makes Quick Repairs

When the freighter, *LORD DUFFERIN*, floated out of the drydock recently a most interesting repair job was brought to a conclusion. In 18½ working days a complete stern section, 64 feet long, was built onto this ship. The *LORD DUFFERIN* is a British ship operated by Gaston, Williams & Wigmore, New York. While she was at anchor in New York harbor on last February, she was rammed by the Cunard liner, *AGUATANIA*, inbound and returning troops. The stem of the big liner cut the freighter completely in two at a point about 12 feet forward of the poop deck and just aft of cargo hatch No. 5. The after portion of the vessel, including rudder, stern frame, propeller, tailshaft, stern tube, two lengths of intermediate shaft and machinery and fittings in the section, was lost. The work of salvage was promptly begun, the vessel successfully raised and, with the aid of pontoons, towed to the Erie basin plant of the Robins Dry Dock & Repair Co. and placed in the graving dock. Surveys showed that about 64 feet had been cut off and as it was assumed that the missing section would probably be in good condition to put back in place, efforts were made to salvage it.

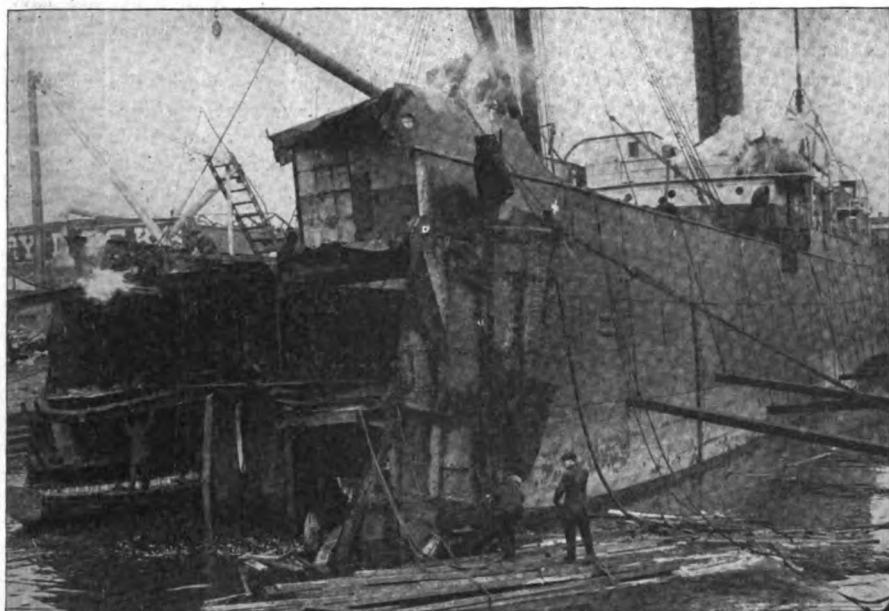
Divers explored the harbor bed for a considerable area but after their several attempts were unsuccessful it was decided to abandon the original section and fabricate a new one. Three molds were taken of the sound portion of the hull, at equal distances, just forward of the cut. New lines were then run for the new stern and faired up to the satisfaction of the owners and surveyors. Molds were then made of all frames, beams, floors, keelsons, stringers, tanks, tunnel recess, bulkheads and deep-plating. A few days later this material had been fabricated and was ready to be put in position.

The task of erecting the after portion of the vessel was then commenced.



READY FOR SEA WITH REPAIRS COMPLETED. A NEW STERN WAS BUILT IN PLACE





WRECKED VESSEL AS SHE APPEARED IN THE DRYDOCK BEFORE PUMPING OUT

Meantime, the stern frame had been manufactured and was set in place immediately after vessel had been placed in dry dock a second time. The entire stern overhand of the vessel, from and including the transom frame aft, had been assembled and riveted together on shore and after being hoisted in place was secured on stays. The counter of the ship weighed about  $12\frac{1}{2}$  tons, while the sternpost weighed approximately  $11\frac{1}{2}$  tons.

While the work of reconstruction was under way the propeller, tailshaft, stern tube, intermediate shafts, bearings, hand steering gear, rudder, fittings, winches and accommodations were being rushed to completion so that there would be no delay in their installation as soon as the work on the hull had advanced far enough to receive them. Following the erection of frames, floors, beams and stringers, templates were made of the shell plating. This was immediately fabricated, hung on the ship and riveted in place.

## Uses of Monel Metal

Although discovered about 10 years ago the adaptability of monel metal to marine work is just beginning to be more widely utilized. This metal resembles nickel in appearance but has tensile properties more like steel. Technically, it is an alloy of nickel and copper, containing about 67 per cent nickel, 28 per cent of copper, and 5 per cent of other elements. This remaining 5 per cent consists partly of iron from the original ore and partly of manganese, silicon and carbon introduced in the process of refining. It contains no zinc or aluminum and can be machined, forged, soldered and welded, both electrically and by the

oxyacetylene process. It takes and retains a perfect nickel finish. In cast form, its minimum tensile strength is 65,000 pounds per square inch, while in rolled form it tests as high as 100,000 pounds per square inch.

Monel metal is said to retain its strength at high temperatures, and this makes it particularly valuable for the triaming of valves used with superheated steam, for turbine blading, and all purposes where strength at high temperatures is most essential. Its noncorrosive properties are said to be high.

This metal is adaptable for propellers of all sizes. It is used for pump liners, pump rods, propeller shafts and boat trim, such as deck fittings, stern bushings, rudders, struts, stuffing boxes, shaft sleeves, etc., and for marine condenser parts, such as tubes, ferrules, etc.

Monel metal is not a synthetic alloy, but is a natural combination of nickel and copper. It was discovered in an

ore deposit in Ontario. About 14 years ago, the idea was conceived that for certain purposes it was not necessary to separate the nickel and copper in this ore, but that an alloy could be produced direct. This was proved to be both technically and commercially possible, the result being the inauguration of the monel metal industry.

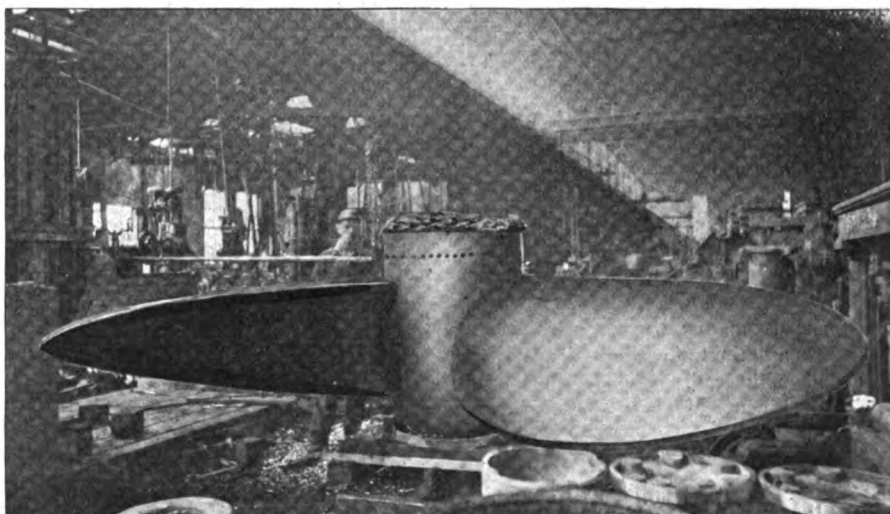
## Has Square Masts

In the *MOSHICO*, a vessel built by the Mobile Shipbuilding Co., Mobile, Ala., the lower portions of the masts, which are steel, are square instead of the time-honored round section. The steel portions rise 41 feet above the deck and are arranged so that they can be lowered, forward or aft, for passing under bridges. The wooden parts of the masts are 34 feet long making the total length 75 feet. The wood section begins at the crow's nest, forward, and enters the steel portion for approximately a depth of five feet. The steel part at this juncture is  $1 \times 1\frac{1}{2}$  feet.

## Machining Propellers

The accompanying illustration shows a propeller  $17\frac{1}{2}$  feet in diameter, one of several being built by the Hyde Windlass Co., Bath, Me. This unit is manganese bronze. To take care of the excessive shrinkage of this material and to provide a sufficient head to insure filling the mold it is necessary to allow considerable excess metal. This casting as it comes from the sand weighs 31,000 pounds and when finished ready for installation this weight is reduced to 28,000 pounds.

In the accompanying illustration, the operation shown consists of cutting away the head. This is accomplished by mounting the unit on the floor, so it can be swung radially, and drilling a series of holes



CUTTING AWAY THE HEAD ON A LARGE PROPELLER BY DRILLING INTERSECTING HOLES



which encircle the entire casting. As the holes run into each other a short distance from the periphery, the final operation of removing the head is easily done by means of a hammer and cold chisel. The drill is mounted in an extension socket which is driven by a turret lathe or other convenient tool. If reasonable care is exercised in laying out the holes before drilling, the operation can be carried out without services of a skilled mechanic.

## Record of War Work

A circular recently issued by the Todd Shipyards Corp., deals with the company's activities in repair and construction work during the war. More than 250,000,000 tons of shipping were handled. This work included fitting out transports to carry troops to France, the rehabilitation of a number of damaged German liners, lengthening lake vessels, supplying engines and the re-

fitting of yachts for use by the navy as scout patrol vessels and other emergency war work.

Aside from this work, the company built mine sweepers for the navy department, freighters and scout cruisers. Some of the vessels handled by the company were the GEORGE E. WARREN, L. V. STODDARD, GEORGE HAWLEY, CURACA, FRED R. KELLOGG, LORD DUFFERIN, GEORGE WASHINGTON, PRESIDENT LINCOLN, MOUNT VERNON and HAMBURG.

# Should Valves Be Set With No Lead?

THE opening of the port to admit steam into the cylinder of an engine while the piston is yet a short distance from the end of its stroke is properly referred to as lead, and is so nearly universally accepted as an indispensable condition to the successful operation of a steam engine, that it seems almost a desperate proposition to oppose lead, according to Harry Stone in *The Bulletin* of the Lake Carriers' association. The text books on steam engineering advocate lead. The technical schools advocate and teach lead. The question of lead is seldom referred to except as a mechanical necessity for the smooth and economical performance of a steam engine. But is it? After more than 50 years' experience as stationary and marine engineer, the writer is decidedly opposed to lead.

With the slide valve set with lead there are two points in the revolution of the engine where, instead of the steam driving the engine, the engine has to actually drive the lead steam back into the boiler against boiler pressure. Added to this is the greatly increased friction on the crank pin and journals, and it requires no argument to prove that these deterrents retard the speed of the engine. The lead steam is not wasted because it does not escape but it is a question whether it would not be as well for it to escape as for the piston to buck it back into the boiler.

An absolutely convincing test of the efficiency of the two arrangements, lead or no lead, can be made only by shifting the eccentric or altering the structure of the slide valve in the same engine. This the writer has always done when possible, and found that engines of between 40 and 24 inches stroke, will make from one to two revolutions more in a minute without lead than they will with lead.

The argument advanced by engineers in favor of lead, that lead steam is a necessity to cushion the piston and bring the moving parts of the engine quietly to rest at the centers, can be

graphically shown to be unnecessary by drawing a circle of any convenient size to represent the path of the crank pin in motion, and in the circle draw a supposed vertical diameter and dot its extremities to represent the centers. In this simple diagram it can easily be seen that the speed of the piston is greatest while the crank pin is sweeping through the middle of the side arcs of the circle and gradually diminishes as the crank approaches the center line where the piston is stopped and reversed in direction by the compression which is provided for the very same purpose as lead, more smoothly and quietly than by the trip-hammer impact of lead steam.

Another objection to lead is, an engine will work slower under check without lead than it will with lead, because it is the momentum of the moving parts of the engine that carries the crank past the centers. As the crank approaches the center, the pressure of the lead steam and the increased friction are again encountered, and unless the motion of the engine is great enough to generate sufficient momentum to overcome both, the engine stops.

This resistance is sufficient to reduce the speed in ordinary running, one to two revolutions per minute, say one and a half. Then a ship driven by a wheel with blades set to 16-foot pitch and with 25 per cent slip, will lose 18 feet each minute or nearly five miles in 24 hours. Of course this computation will vary with propeller wheels set to different pitch and slide valves set with different lead, but it gives an approximate idea of the aggregate loss to the vessels through the mistaken idea of lead. The greater the lead, the greater the evil. The less the lead, even if it extend to setting the valve with an eighth of an inch steam lap, the more satisfactorily the engine works in all respects. It must be borne in mind that it is the momentum of the moving parts of the engine that carries the crank past the centers, and not the pressure of steam.

The writer points out that he does

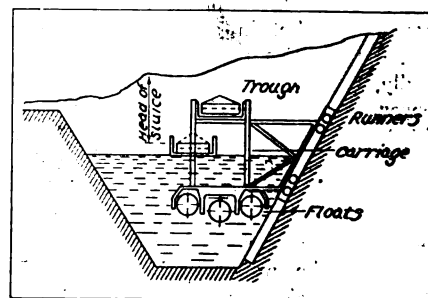
not expect all engineers to agree with him unless they, or some of them, have had practical experience with both methods, lead or no lead, but he sets forth that the subject is timely and worthy of discussion.

## System of Dry Lock

Where a canal connects two rivers situated at different levels, and the usual chamber lock is necessary to pass traffic from the higher to the lower level, the water taken from the higher level stream is considerable. Sometimes tunnel sluices in conjunction with an auxiliary basin are used, but in such cases the cost of pumping the water is high. To overcome these difficulties many schemes of dry lock have been elaborated, including hoists, railways, etc., for ferrying the traffic over from the high to the low level and vice versa, but the cost of these is generally prohibitive, owing to the heavy and expensive machinery which it is necessary to install.

A German firm has patented a new system of ferrying ships, etc., used for canal traffic, which is said to combine the advantages of the existing railways or hoists and those of an ordinary lock.

The new ferrying plant, which is shown in the accompanying illustration, consists of an iron carriage, which carries a trough filled with water for holding the vessels to be ferried. The weight of the carriage is only to a small extent borne by



PLAN OF DRY LOCK SYSTEM

rollers or wheels, the major part being supported by a number of horizontal cylindrical floats, which renders it possible to use an ordinary type prime mover for moving the carriage on its wheels, the power necessary being relatively small.

The immersion floats are so proportioned as to be able to support, when fully immersed, not only their own weight but also the weight of the carriage, which also is immersed to half its height, together with the trough. The floats, when the carriage is moved up and down, are displaced in a special waterbasin, corresponding to a lock-chamber, the water level in which is constant and whose depth increases with the height of travel of the ferryway. This height of travel is represented by the head of the sluice, and is equal to the difference in level between the upper edge of the floats and the lower edge of the trough. When raised from the middle position, in which the carriage is immersed to half its height, the iron carriage projects still further out of

the lock chamber or basin, gradually loses buoyancy, and thus increases in weight, this increase being no longer borne by the floats, but by the carriage wheels and the driving machinery. The reverse process takes place when the carriage is lowered. Additional stresses, which cannot be taken up by the floats, are caused by wind pressure on the trough, ferrying carriage and vessel transported. Various other forces are set up and are supported by the driving engine.

The firm of Gruen & Bilfinger has just completed an installation of this kind for the Neckar-Danube canal. It is found that with this system, as compared with the usual methods, working expenses are considerably reduced. No water is necessary for working the lock beyond what is necessary to make up for ordinary losses. Also, fewer locks are required and traffic is thereby facilitated. The dry lock, the trough and the float chambers are made of ferroconcrete. —*Zeitschrift des Vereines deutscher Ingenieure.*

## Late Marine Patents

Copies of any of the following patents can be obtained by sending 15 cents in stamps to Siggers & Siggers, National Union building, Washington, by mentioning THE MARINE REVIEW:

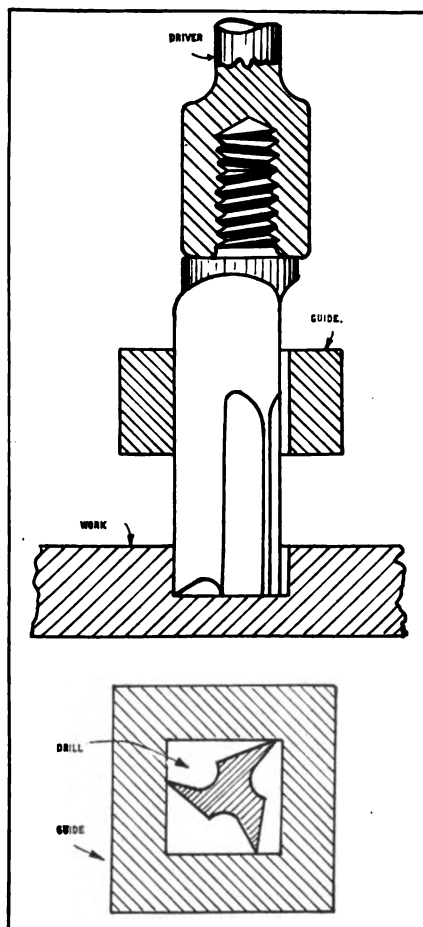
- 1304865—Boat construction, Ezra K. Fallon, Springfield, Mo.
- 1304897—Davit, Thomas H. Marten, Toronto, Canada.
- 1304961—Boat-balling means, John Good, Brooklyn, N. Y.
- 1304984—Boat davit, James R. Irwin, San Francisco.
- 1305238—Submarine boat, Conrad Regenhagen, Kiel-Gaarden, and Hans Techel, Kiel, Germany, assignors to Fried. Krupp Aktiengesellschaft Germania, Kiel-Gaarden, Germany.
- 1305340—Method and means for propelling craft navigating fluid mediums, Louis G. Bostedo, Los Angeles.
- 1305354—Unsinkable lifeboat, Barney Goldman, New York.
- 1305379—Reinforced concrete ship and method of constructing same, Ralph R. Leffler, Chicago.
- 1305643—Boat launching and lowering gear, Roderick Beaton, Pollockshields, Scotland.
- 1305700—Means for protecting ships from torpedoes, Julius Diners, New York.
- 1305877—Ship convoy submarine defense, Mario Carbau, Montevideo, Uruguay.
- 1306375—Reversible pontoon raft, Harold B. Perry and Humphrey W. Chambers, Barrow-in-Furness, England.
- 1305896—Boat or vessel, Samuel Golden, New York, assignor to Hullin Boat Co., Inc., New York.

# Drilling Square Holes in Metal

(A Letter to the Editor of The Marine Review)

THE drill for making square holes in metal, shown in THE MARINE REVIEW for June, is worthy of being better known. Its history, as recalled by the writer is as follows: In the early eighties it was shown at an industrial exhibition held in Glasgow, Scotland. It has been used generally throughout England, France and Germany, and was quite extensively used by the Armstrong Gun Works, now Whitworths, on the River Tyne. Some time during 1889, a tool salesman demonstrated and sold one to the J. Morton Poole Co., Wilmington, Del., which firm used it as a model for making other sizes. A few years later John Jack, foreman of the Harlan & Hollingsworth Co., now the Bethlehem Shipbuilding Corp., Wilmington, Del., improved the drill and also adapted it to milling the square ends of the ports in many sizes of marine engine cylinders built at the Harlan plant. This same style of drill has also been used at the Washington navy yard.

The accompanying illustration is a drill actually used and kept in stock in the toolroom to be checked out and used by any machinist, the same as he would obtain and use a regular



DRILL, HOLDER AND GUIDE FOR MACHINING SQUARE HOLES

twist drill on ordinary machine work. Usually, it is the practice to drill a round hole nearly as large as the desired diameter of the finished square hole. This is not absolutely necessary but it is commendable as the strain on the drill spindle is heavy due to the fact that the driver springs as the drill "wobbles" in its guide. It is understood, of course, that the drill guide must be rigidly fastened above the hole to be drilled. The lower illustration is a sectional view through the guide and drill. It shows that in order to rotate, the three corners of the triangular drill must follow the outline of the square guide and, therefore, the similarly shaped cutting corners of the drill will travel through and cut the same shape.

The illustration is self-explanatory. It shows the driver which should be long and flexible, the drill guide, drill and the piece of metal to be drilled, with a square hole partly machined through it.

This drill need not be confined to square holes, as holes of any number of sides, such as six or eight, may be drilled, provided, the drill and its guide have the proper shape. It is seen that the guide is in reality a leader for generating the shape desired. If the guide is hardened its life is increased.

(Signed) A Edward Rhodes.

The author is instructor of apprentices at the Harlan plant of the Bethlehem Shipbuilding Corp., Wilmington, Del.

# Activities in the Marine Field

Latest News From Ships and Shipyards

## Fall Grain Tonnage in Good Demand

**T**ONNAGE for early loading in the fall grain trade is in demand.

The Grain corporation came into the market on Sept. 9 for capacity to move approximately 4,000,000 bushels. The chartering committee shortly afterward covered about half that amount and lined up nine vessels to load for Buffalo and two small vessels for Lake Erie side ports. Most of the boats under charter reported for cargoes immediately. A number of cargoes will be taken to Fairport and Erie but Buffalo will get the bulk of the grain and that condition will continue during the entire grain movement. Indications are that grain will be sent forward freely from the Lake Michigan ports but the outlook for the Lake Superior trade is not so good. According to recent reports the movement from Duluth will not be nearly as heavy as it was last season. Receipts at the ports at the head of the lakes are small and the wheat is not grading. Only small shipments are offered. The market in other lines has not changed. Ore is being offered freely and chartering is active. The boats are getting around fast as the coal movement is light. Ore carriers are experiencing some delay at the lower end of their routes as there is a good line up at most of the docks and a shortage of cars at some ports. Loading in the coal trade continues light.

While enroute from Detroit to Cleveland, the power boat TRAVELER was disabled and picked up by life savers from the Marblehead station in Lake Erie, a mile off the coast of Kelleys island.

The sand steamer CLINTON, owned by the Kelleys Island Lime & Transportation Co., stove a hole in her bow while landing at the company's dock causing her to sink. The damage is not extensive and the vessel will be repaired immediately.

Frederick A. Menge, formerly owner of a fleet of lumber schooners operating between Chicago and Michigan ports, died Sept. 1 at his home in Chicago. He was 79 years old and a veteran of the Civil war.

Deepening of the western portion of Grosse Pointe channel, Lake St. Clair, is now in progress and vessel masters are required to pass the dredge engaged in this work at low speed. All deep-draft vessels should follow the range and pass to the eastward of the dredge.

H. J. Cahours, chief mate of the steamer SULTANA was seriously injured at Kelleys island recently. He was standing on the dock when the tow line of

another vessel parted and hit him. He was removed to the hospital at Marblehead, O. His home is in Marine City, Mich.

The steamer W. R. LINN, which ran aground at Cedar reef, Soo river, recently was released after lightering some of her cargo. The tug L. C. SABIN and the lighter RELIANCE went to her assistance.

Government engineers and representatives of the Pennsylvania railroad recently discussed plans for improvements to the Pennsylvania railroad waterfront property at Ashtabula, O. Failure of the railroad to bulkhead its shore front property has held up improvements for which the port was granted an appropriation of \$83,000, government engineers stated.

Maj. John L. Crossthwaite Jr., assistant director of operations for the United States shipping board at Cleveland, was instantly killed on Sept. 5 in Cleveland when an automobile he was driving struck a street car. He was thrown through the windshield and under the rear trucks of the car. Harry W. Crawford, general manager of the Cleveland office, Canada Steamship Lines Ltd., who was riding with Major Crossthwaite, was thrown from the machine and badly bruised. Major Crossthwaite was 43 years old and came to Cleveland from New York three months ago to succeed W. M. Williams as assistant director of operations for the shipping board at Cleveland. He had charge of the loading and movement to the coast of all steamers built on the Great Lakes for the Emergency Fleet corporation. Major Crossthwaite leaves a widow and two sons. His father is traffic manager of the Atlantic Coast Steamship Co., New York. Major Crossthwaite served in France during the war.

The steamer D. G. KERR with 15,527 tons of coal and 413 tons of fuel, a record cargo, grounded in the channel under the New York Central bridge in Toledo harbor on Sept. 6. The tug A. C. HARDING and the lighter RESCUE went to the assistance of the stranded craft. Traffic on a number of railroads entering Toledo was tied up by the accident. The KERR later struck in Lake St. Clair.

The steamer W. A. MCGONAGLE, Capt. John Burns, loaded a record cargo of coal, 15,161 tons, at the Baltimore & Ohio railroad dock at Toledo, Sept. 4. She also took on 380 tons of fuel making a total cargo of 15,541 tons when she sailed. The previous record was

held by the D. G. KERR which delivered 14,825 tons. Two days later the KERR again broke the record, the new mark being 15,527 tons of cargo and 413 tons of fuel.

The submarine fog signal at Whitefish point light station, which was temporarily disabled, is now in commission.

The steamer G. A. THOMPSON in coming down the river from the McKinney steel plant, Cleveland, recently struck an obstruction and twisted her rudder.

The steamer CODORUS, an old lake vessel, which was taken to the coast and grounded on Escunimas point, near Chatham, N. B., last December, was released recently. She leaked considerably after being pulled off into deep water but her pumps kept her afloat.

The Ida L., a small passenger boat bought at Cheboygan, Mich., was commissioned to sail between Sandusky and Lake Erie island ports by Capt. John Newman, Sandusky, present owner of the craft. She takes the place of the steamer CUPID which was wrecked in a storm when enroute between Sandusky and Put-In-Bay with a cargo of gasoline last April.

The tug L. C. SABIN and the lighter RELIANCE released the steamer QUEEN CITY which recently went aground in the Soo river while down bound with a cargo of ore.

The steamer LAKE FELDEN was launched at the yard of the American shipbuilding Co., Lorain, O., Aug. 30. She is being built for the Emergency Fleet corporation. Six more government boats are on the company's ways at its Lorain yard.

At Sandusky harbor, two steamers, both light, ran aground recently. They were the SEITHER and the FITZGERALD. Both vessels were pulled off by the harbor tug YALE.

The passenger steamer HURONIC, while being taken out of drydock at Port Arthur, Ont., was pulled into a dredge by a tug. The HURONIC's upper works were badly damaged.

The steamer CAPTAIN DAN, which was formerly the HELCA, now sunk in Quebec harbor, is in bad shape according to the underwriters and may be a total loss.

The pilot license of Capt. Ed Lajov, who was master of the tug SINCLAIR

when she was rolled over, has been suspended for four months. Captain Lajoy has appealed his case to the supervising inspector of the district.

\* \* \*

The underwriters have sold the wrecked steamer *LANDBO*, together with her coal cargo, to the Great Lakes Towing Co. The *LANDBO*, which was abandoned by her owners as a constructive loss, foundered off Point Au Sable, Lake Huron, a few weeks ago.

The wrecking steamer *FAVORITE*, Capt. Alex Cuning, is working on the craft.

\* \* \*

The barge *QUEBEC* which was wrecked at the elevator explosion at Port Colborne a few weeks ago was raised by the Le Beau Wrecking Co., recently.

\* \* \*

The labor trouble on the docks at the head of Lake Superior has made a big cut in coal receipts which greatly reduced the gain made during the early

part of the season. According to a report received by the Tomlinson Co., Cleveland, its docks at Duluth and Superior handled but 62,100 tons of hard coal in August compared with 219,600 tons for a like period of last season. The fleet only delivered 520,500 tons of soft coal last month and in August, 1918, the two ports received 1,442,000 tons.

\* \* \*

The steamer *PHELAN*, which went ashore near Cardinal, was released after lightening part of her cargo.

## Late News From Atlantic Seaboard

**H**UNDREDS of steamers, schooners and power craft made idle by the strike of fishermen for a fixed minimum price on their product, have been restored to the industry out of Boston and Gloucester and receipts of staple groundfish now run as high as 2,000,000 pounds daily. Thousands of dollars were lost to owners of vessels and the outfitters on account of the strike which tied up the industry of New England more than a month.

\* \* \*

At Green's shipyard, Boston, the American steamship *LONOKE* is being repaired at cost of about \$30,000. The plant has been rushed with work a long time and just now it is engaged in restoring several vessels to a condition where they may be turned back to the owners following war service.

\* \* \*

The Maine Coast Steamship Co., operating the steamers *MOHAWK* and *MASASOIT* between Boston and ports in Maine, soon will occupy the north side of Long wharf recently vacated by the United States army quartermaster's department. For a number of years, the company has had its terminal at Lewis wharf and was crowded for pier and shed space.

\* \* \*

The new 4-mast schooner *LUCIA P. Dow* has been chartered to load coal at Norfolk, Va., for Lisbon at a big rate by Crowell & Thurlow, Boston. The vessel was built for this concern at the Cobb shipyard, Rockland, Me., and is named for the wife of F. H. Dow, treasurer of the F. H. Dow Co., Boston.

\* \* \*

Last month the clerical force at the Boston immigration station was reduced because an appropriation was not available. The curtailment also affected a number of laborers. Business at the station, however, has materially increased recently and a way may be found to restore the employees to their former status.

\* \* \*

Important improvements at the port of Pawtucket, R. I., have been under way for some years. The work was held up during 1918 on account of the war, but is now rapidly progressing toward completion. The project is that of deepening and widening the channel of the Pawtucket river, from the city to Narragansett bay, a distance of three

miles. The work entails over 200,000 cubic yards of dredging.

\* \* \*

A new sailing service has just been opened between Montreal, Que., and Glasgow, by the Canadian Pacific Ocean service. Two vessels, the *CORSICAN* and *SCOTIAN*, will make regular fortnightly trips carrying freight and passengers.

\* \* \*

Secretary Daniels of the navy recently announced that a contract for battleship No. 54 to be named the *MASSACHUSETTS*, has been awarded to the Bethlehem Shipbuilding Corp., Quincy, Mass. This vessel, which is the last of the authorized battleships to be contracted for, will be of 43,200 tons displacement.

\* \* \*

Boston now enjoys direct service with Rotterdam through resumption of the Holland-American line after three years discontinuance. Fortnightly service was restored with sailing of the *ZUIDERDYK* last month.

\* \* \*

Fire, for which a lighted cigaret is blamed, caused damage amounting to about \$50,000 to the hull and cargo of the American steamship *WESTERN SCOUT*, loading at Boston. About 10,000 bags of refined sugar were affected in addition to consignments of automobile parts and machinery.

\* \* \*

The Portuguese steamer *DONDO* recently cleared at Philadelphia for Lisbon with a full cargo of flour. She loaded in fast time, taking on 88,458 sacks of flour weighing 4883 tons in 28½ hours. The vessel's agent is the Earn Line Steamship Co.

\* \* \*

The *OVERBROOK*, a deck scow which recently was being towed up the Delaware river by the tug *HARFORD*, sprung a leak off Kinkora and went to the bottom at once. She dragged the tug down with her. Both vessels are entirely submerged at high water. Capt. John Reeves, master of the tug, was drowned but the rest of the crew of both vessels escaped by swimming ashore. The scow was loaded to her deadweight capacity with a cargo of pebbles.

\* \* \*

The arrival in Boston of the White Star line steamship *CANOPIC*, which sailed from Naples, restores the service

between Italy and Boston which was interrupted by the war. In addition to 900 passengers taken aboard at Naples, and Palermo many more were taken on at Punta del Gada, Azores islands.

\* \* \*

The Newburgh Shipyards, Inc., recently launched the 9000-ton freighter *PEEKSKILL*, which is under construction for the Emergency Fleet corporation. This vessel is of the poop, bridge and forecastle type and has two continuous steel decks. Her general dimensions are: Length, 401 feet; beam, 54 feet; depth, 32 feet 10 inches; loaded draft, 25 feet 6 inches. She will be propelled by a Westinghouse turbine and reduction gear of 2800 shaft horsepower. Steam will be supplied by three water-tube boilers of the Forrester type.

\* \* \*

The steamer *CITY OF MELBOURNE*, operated by Norton, Lilly & Co., New York, struck an unknown vessel south of Sandy Hook, recently. She was enroute to Yokohama and from wireless dispatches it is understood that she suffered but slight damage. She proceeded on her voyage.

\* \* \*

Thirty steel tugboats are reported to be in process of construction for the United States shipping board. Two have been launched from the Bethlehem yards at Elizabethport, N. J. They measure 150 feet in length, are equipped with engines of 1200 horsepower and are guaranteed a speed of 12 knots.

\* \* \*

The United States Steel Corp. recently let contracts for the construction of 20 steel cargo carriers of 10,000 tons. These vessels are designed for long deep-water voyages. The vessels will be built at the Federal shipbuilding yards at Kearney, N. J., and the Chickasaw yards at Mobile, Ala.

\* \* \*

The Chester Shipbuilding Co., Chester, Pa., is investigating its waterfront on the Delaware river with a view to constructing a large drydock at an approximate cost of \$2,000,000.

\* \* \*

The concrete ship *ATLANTUS*, first of the type to be delivered from an Atlantic coast shipyard, and the second concrete ship to be operated in Atlantic waters, has been turned over by the shipping board to the Raporel Steamship line, New York, for operation in

the company's West Indian service. The ATLANTUS was built at Wilmington, N. C., and registers 3000 tons.

\* \* \*

Governor Sproul of Pennsylvania has approved a bill, which carries an appropriation for \$100,000, for a state nautical schoolship and authorizes the commissioners of navigation to receive from the secretary of the navy such vessels as may be assigned for this purpose.

\* \* \*

The Baltimore Dry Docks & Shipbuilding Co., Baltimore, recently secured a contract for the conversion of the troopship EDWARD LUCKENBACH to a cargo carrier. This work will be done at the company's South plant. The LUCKENBACH was built at Quincy, Mass., by the Bethlehem Shipbuilding Corp. and has a deadweight tonnage of 15,500.

\* \* \*

The largest cargo-carrying barge on inland waters has been launched in the Mississippi river at the yards of the Dubuque Boat & Boiler Works, Dubuque, Ia. The barge is one of 19 being built for the Mississippi Valley Iron Co., St. Louis, and will be utilized

in transporting iron ore and coal between St. Louis and St. Paul. The Dubuque Boat & Boiler Works has the contract for building seven of the 19 barges. The barge already launched is known as No. 13, all steel, 300 feet long, 48-foot beam, a depth of 10 feet and will carry 2500 tons of freight.

\* \* \*

Newport News, Va., is to have another shipyard which will be built by the Southern Shipyard Corp., recently organized with \$200,000 capital. The plant is scheduled to be in operation by the end of the year and will employ 500 men.

\* \* \*

The Winnisimmet Shipyard, Inc., Chelsea, Mass., is constructing a 3500-ton railway drydock. The Crandall Engineering Co., East Boston, Mass., is the designer and constructor.

\* \* \*

After a fruitless search off Cape Hatteras for traces of the capsized British steamship CLANGORDON, the coast guard cutters SEMINOLE and YAMACRAW returned to their bases. It is reported

that the vessel probably righted herself and sank. She suddenly capsized 120 miles southwest of Hatteras, losing three of her crew.

\* \* \*

The Colonna Marine Railway Corp., Norfolk, Va., is constructing a 4000-ton railway drydock. The work is under the supervision of the Crandall Engineering Co., East Boston, Mass.

\* \* \*

Contract for the construction of a 5000-ton drydock at Pensacola, Fla., has been let to the Aberthaw Construction Co., Boston. The dock was designed by the Crandall Engineering Co., East Boston, Mass., and consists of five floating pontoons each 100 x 40 feet x 10 feet deep. The dock will cost approximately \$450,000. The construction will call for about 1,500,000 feet of yellow pine and approximately 250 tons of iron and steel. Each of the pontoons will be equipped with four submerged electric centrifugal pumps which will empty the dock in one hour. The dock is being built for the Emergency Fleet corporation and will be used largely for government work.

## Activities Along the Gulf Coast

THE Foundation Co., New Orleans, is to purchase the yard it has established at that city from the French government, as soon as the company completes construction of the five 9000-ton nonsinkable steel steamers. It is now building for France, according to Hewitt Crosby, works manager for the company. The French government will not build any more of the nonsinkable Le Parmentiere type ships, inasmuch as the submarine danger is passed. The republic of France has sued in the civil district court at New Orleans for reduction of \$500,000 in the assessed valuation of the plant.

\* \* \*

The Mississippi river commission has allotted nearly \$2,000,000 for levee and revetment work to keep the lower channel of the river in shape for navigation from the Red river to the Gulf of Mexico. For the first time in the history of the committee, provision is

made for the carrying on of experimental work in the building of revetments and levees.

\* \* \*

The Pensacola Shipbuilding Co., Pensacola, Fla., launched the ROCKPORT, a 9000-ton steel cargo vessel on Aug. 6. She is the fifth vessel of this class to be launched by the company. The first vessel to take the water on the company's contract for 10 ships was the CUSHNOC, which was launched March 15. She was followed by the ESCAMBIA on May 24, the NOCCALULA, June 24, and the RED MOUNTAIN, July 15. Two of these vessels are shown in the accompanying illustrations.

\* \* \*

The New Orleans naval station launched Tug. No. 50, Aug. 16, the twelfth hull to be launched from the station since the war. Miss Valentine Nelson, daughter of Commandant V. S. Nelson, of this station, christened the tug, which is 88 feet long, and will be used in harbor work by the navy.

\* \* \*

The Nicaraguan Fruit & Steamship Co., Jay Weil, general manager, with headquarters in New Orleans, announces establishment of freight and passenger service between New Orleans and Bluefields, Nicaragua. Weekly sailings are scheduled and rates for both freight and passengers will be lower than the prevailing tariff.

\* \* \*

Latin-American ports are up in arms over the action of the shipping board in turning down the applications of American shippers for small steamers for use in trade with the republics to the south, according to R. L. Vignes, a large importer and exporter of Rio de Janeiro, who was in New Orleans

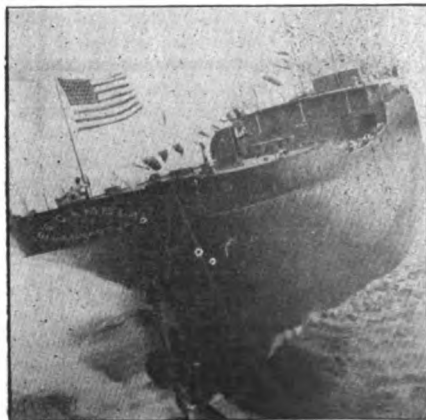
recently. Latin-American shippers and port authorities feel that these American-built ships should have been put into this service under the American flag rather than allowed to go to European owners.

\* \* \*

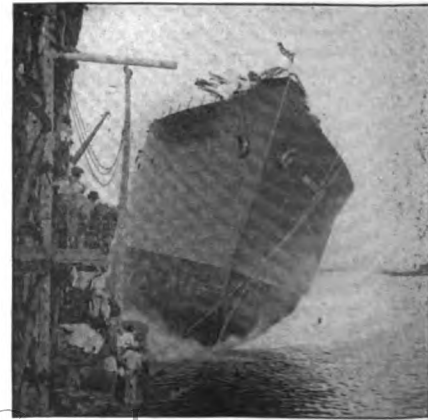
Seven ships of total tonnage of 24,500 were launched in southern yards for the United States shipping board during the week ending Aug. 14. Five of these are wooden and two composite ships. Of the wooden ships two were sent into the water at Brunswick, Ga., and two at Jacksonville, Fla., while one was launched at Pascagoula, Miss. The composite boats were built and launched at Savannah, Ga.

\* \* \*

Northbound freight from Bolivia and other South American countries was transferred at Colon, beginning Sept. 1, according to an agreement made between the United Fruit Co. and the



LAUNCH OF THE ESCAMBIA



LAUNCH OF THE NOCCALULA



South American Steamship line. This gives New Orleans what is virtually a through steamship line from those countries. Hitherto, southbound freight has been transferred, but not northbound. New Orleans annually sends to Bolivia alone about \$1,000,000 worth of merchandise, but the major part of Bolivia's annual exports of \$150,000,000 worth of raw materials goes to New

York. By the new arrangement, manufacturing centers of the Mississippi valley will have a chance to get some of these raw materials.

One of the longest trips ever taken by a dredge under its own power was that of the United States steel dredge H. S. TABOR, Capt. George C. Rogers, which, late in August and early in Sep-

tember, 14 days in all, went from Lake Charles, La., to St. Paul, Minn., by way of inland waterways and the Mississippi river.

Neil Richard Sampson, 52, who had served nearly 30 years on the Morgan (Southern Pacific) steamship lines, died late in August in New Orleans.

## Up and Down the Pacific Coast

FIRST of the Great Lakes-built vessels to come to Puget sound, the steel steamer GOODSPEED is in Seattle undergoing docking and repairs at the Todd Drydocks, Inc. The GOODSPEED was built at Wyandotte, Mich., and brought a cargo of ore from the West coast to the Tacoma, Wash., smelter. For her outward voyage, the Pacific Steamship Co. will load her with a cargo of Puget sound lumber for Cuban ports.

Losing her way in a dense fog, the Japanese steamer SHINBU MARU, of the Nippon Yusen Kaisha fleet, went ashore on the shores of Vancouver island and was floated only after strenuous efforts had been made. The vessel is badly damaged and will require extensive repairs. Her cargo of general Oriental merchandise sustained severe damage by water. When she arrived at Seattle in tow, the vessel had 18 feet of water in her holds.

Heavy fogs, due largely to extensive forest fires, have been the cause of two recent maritime mishaps in the Straits of Juan de Fuca. The new government-owned wooden steamer BLAKELY was seriously damaged by going ashore and returned to Seattle where she is still undergoing repairs. It was necessary to discharge the entire cargo of lumber. The 4-mast schooner MARY E. FOSTER has just been floated after lying on the beach near Port Angeles for 10 days. This vessel will also require considerable repairs. She was floated by tugs at a cost exceeding \$15,000.

By resolution, the port of Seattle has decided to make no tax levy for port purposes for the year 1920. It is estimated that the cash on hand, estimated receipts and earning power of the properties will take care of the expenses for the coming year. In fact, it is believed that there will be a surplus if the port's business continues as at present. The expenses for 1920 are estimated as follows: Salaries, wages, etc., \$1,893,942; interest on bonded indebtedness, \$461,884.

What is said to be the highest scale of wages in the world for similar work has just been granted the longshoremen of Washington, Oregon and British Columbia ports. The new agreement has just been signed granting a uniform scale in the three districts involved. Heretofore, each district has had its own agreement with the workers. Under

the new scale, an increase of 15 cents an hour for straight work and 30 cents an hour for overtime is granted. About 7000 longshoremen are affected by this agreement, which provides for arbitration in case of grievances. The employers are insured against strikes or stopping of work. For general longshore work, the new scale is 90 cents an hour and \$1.35 for overtime. Checkers, weighers and spotters are given the same wages. Those employed on a monthly basis are to receive not less than \$150 with the regular rate for overtime. Regular working hours are 8 a. m. to noon and 1 to 5 p. m. This agreement clears a situation which has been threatening for some time, several local strikes having taken place in the last six months.

For several weeks, some of the larger steel yards in the Pacific northwest district have been using their reserve supplies of material. Consequently the shipyards have not had to cease operations but the supply of steel has been greatly reduced by the strike of railroad shopmen. Many cars of steel, engines and other material required in shipbuilding were stalled for days but recently these shipments have been arriving more regularly. The Seattle and Tacoma yards ordinarily keep a month's reserve supply on hand.

After being ashore on Grays harbor since last January, the wooden motor schooner JANET CARRUTHERS has been floated and it is expected that she can be repaired and returned to service. The vessel was pulled off the sands by her own donkey engines straining on cables attached to anchors placed in deep water. The wreck was sold last spring to J. H. Price for \$21,000 and the first attempt had to be abandoned after the hull was moved about 80 feet. Prior to that, the engines and lumber cargo had been taken off.

Reports from British Columbia give a gloomy outlook for the pack of salmon on the Fraser river this season. That district will put up only about 7000 cases this year as against 18,000 in 1918. On the American side, the pack will be 20,000 cases compared to 50,700 last year. These figures are far below those for 1915, which was regarded as a normal season when the Fraser river had a pack of 91,200 cases and Washington 64,500. The decrease is blamed by the Canadians on the American fishermen who, they state, have depleted the

supply by catching the fish while they are on their way to the spawning grounds of the Fraser.

British Columbia courts have awarded the owners and crew of the fishing tug ISKUM \$1000 for saving the passengers and taking the mail off the stranded Canadian Pacific railroad steamer PRINCESS ADELAIDE last October when she was ashore between Victoria and Vancouver. The sum of \$6000 was asked.

Pacific coast steel shipbuilders are worried by the high rates on shipbuilding material. They state they are operating under a heavy handicap as eastern yards do not have to freight steel across the country. The through rate on steel from eastern points of origin to Japan is less than the freight by rail from the east to Pacific ports. Shipbuilders assert that some concession will have to be made by the railroads if Pacific yards are to continue to compete with eastern plants. At the present time it is stated that it costs from \$50,000 to \$80,000 freight on the materials used in the averaged sized steel steamer built on the Pacific coast.

Inaugurating the shipping board's new service between Puget sound and Liverpool, the steel steamer EELBECK, built by Skinner & Eddy, has begun her maiden voyage from Seattle. She is carrying a general mixed cargo.

The government has sold to a San Francisco firm of wreckers the remains of the cruiser MILWAUKEE which was stranded four miles north of Humboldt bay on Dec. 16, 1916. The sum paid for the wreck is \$30,000. The MILWAUKEE was wrecked while attempting to assist submarine H-3 which also proved a total loss.

J. E. Chilberg and associates, Seattle, have purchased nine wooden motorships, built by the Sloan and Patterson & McDonald yards for the Australian government. They will be used in general Pacific trade.

Three thousand tons of copper ingots valued at \$1,440,000, said to be one of the largest shipments ever dispatched from Seattle was shipped to the Orient recently by the Japanese steamers TOTAI MARU and GENZAN MARU of the fleet of Frank Waterhouse & Co.

# Equipment Used Afloat, Ashore

Launchway Planer—Flange Thread Miller—Ash Conveyor—Ten-ton Cross-travel Dock Crane — Drilling Boiler Plates — Oil Burning Equipment

**T**O keep launching ways level and smooth is of the utmost importance if launchings are to take place without a hitch. Again, true launching ways insure the vessel taking the water with a minimum amount of strain to the hull.

With the object of keeping the ways in proper condition, the Submarine Boat Corp. recently devised the machine shown in the accompanying illustration. This is an electrically operated planing machine, pushed over the ways by the operator. The planing knives resemble those used on an ordinary wood planer and are revolved by an electric motor which is mounted over them, power being conveyed by a belt which is provided with an idler to impart the proper tension.

In operation, the device is said to resemble a lawnmower but owing to its appearance the shipyard workers at the company's yard have christened it the "wheelless go-cart."

## Flange Thread Miller

Steam and other pipe lines subjected to heavy duty and continuous service require properly fitted pipe flanges. With the object of producing accurate flange threads for pipe installations, the Smalley General Co., Inc., Bay City, Mich., recently developed the machine shown in the accompanying illustration.

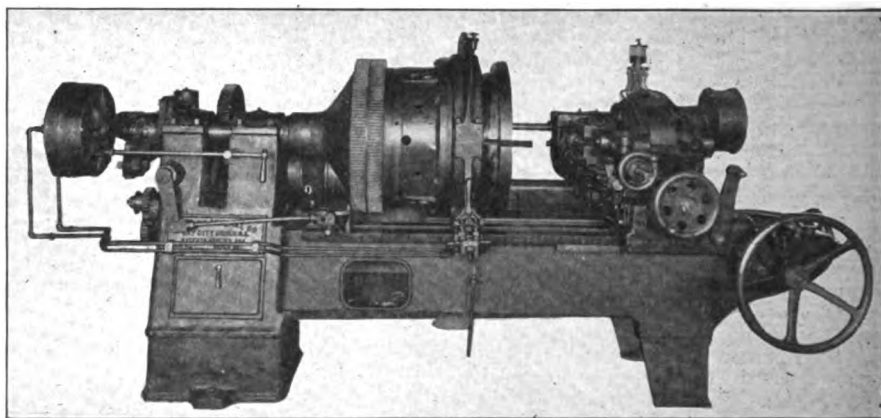


DEVICE FOR SMOOTHING LAUNCHING WAYS

The machine is of rigid construction throughout and is designed for heavy duty. It consists of a substantial bed with which is incorporated the headstock for rotating the work while the carriage that supports the cutting mechanism travels on ways provided for this purpose. The machine, it is said, can be successfully and economically operated by semiskilled shop labor. The work to be threaded revolves

possible if a 2-speed countershaft is used.

A power facing attachment is provided which is driven from the main spindle. Three feeds are provided:  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{3}{8}$ -inch for each revolution of the work. This feature is so arranged that it is readily reversed and it is also provided with trips to throw out the feed when the tool has traversed the required distance. The machine is



THIS TOOL IS EQUIPPED WITH A ROTARY HOB—IT FACES THE FLANGE AND CUTS THE THREAD FROM THE ROUGH CASTING AT ONE SETTING

in a chuck while the cutting is accomplished through the medium of a revolving hob. With the object of giving the hob the proper travel to produce a tapered thread, a rigid taper attachment is provided. It is pointed out that this machine dispenses with a boring operation as the thread is milled from the rough, a practice which requires an accurate taper device.

The collet chuck for holding the work is of the air-operated type. This device holds the work securely and it is said that the time required for taking out the finished piece and substituting a new one is but a few seconds. The chucks are equipped with false jaws to adapt them to various sized flanges. They are arranged to take any size flange up to  $23\frac{1}{2}$  inches, outside diameter.

The chuck body is threaded to the main spindle and is driven through the medium of a staggered-face, broad-tooth spur gear. It is stated that this feature delivers the driving power as near as possible to the cutting point, thus reducing torsion to a minimum. The shaft that carries the pinion is driven through the medium of a worm gear from another shaft, the latter having a 3-step cone. This gives three speeds from the countershaft. Six speeds are

equipped with a lubricating pump which supplies cutting compound to the hob, through the medium of a flexible pipe.

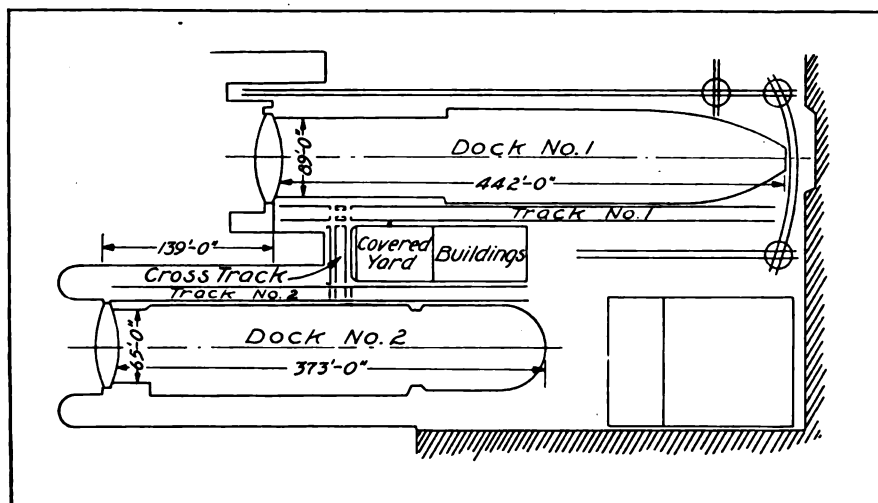
In operation, the flange is chucked with the face out. Then the flange is faced at the correct turning speed after which the milling speed is thrown in and the thread milled. The approximate horsepower required to drive the machine varies from 5 to 7, depending on the class of work to be threaded.

## Ash Conveyor

An ash conveyor of the steam jet type, manufactured by the George J. Hagan Co., Pittsburgh, has been installed at the Ecorse yard of the Great Lakes Engineering Works, Detroit. The conveyor consists primarily of a cast-iron pipe, close to the individual boiler ash pits. By means of a vacuum the ashes are drawn through a vertical pipe into a tank outside the boiler room. From this tank, the ashes may be disposed of as desired.

## Cross Travel Dock Crane

A new type of portal crane with special gear to enable it to travel both longitudinally and transversely was recently built for the Austrian-Lloyd arsenal at



PLAN VIEW OF PORTAL CRANE BUILT FOR THE AUSTRIAN LLOYD ARSENAL AT TRIESTE, AUSTRIA

Trieste by the Skoda Works, Pilsen, according to *Zeitschrift des Vereines Deutscher Ingenieure*. The crane serves two docks parallel to each other, but separated by some distance, and connected with a cross-track over which the crane travels by means of the special gear.

The crane is driven by a 220-volt electric motor. The current is conducted by a special sliding device and the usual cables. This arrangement insures long travels being made easily, and the traversing of the cross-track without repeated adjustments of the cables. The crane, as constructed, is able, owing to the cross-travel gear, to serve the two docks as well as the region between them, although the length of jib is only 44 feet. The electrical part of the crane was supplied by the Austrian Siemens-Schuckert Works.

The upper part of the crane rests on eight runners, each two of which are supported on a bascule, as is also the entire crane as long as it is on one of the two longer tracks. For cross-traveling, double runners are fitted into the four feet of the portal which project through the upper bascule. The hoisting gear has a loose pulley and two pairs of spur wheels. The speed of descent is controlled by a braking switch. A special slipping clutch is fitted into the worm drive, which is used in common for the slewing and tipping gear. This clutch protects the drive from shocks, especially at the end positions when tipping the jib.

The crane can run unimpeded, over the crossings, in the longitudinal direction, as at that spot the cross-rails are interrupted. The gaps are bridged over by swivel pieces, which when not in operation are parallel to the lengthwise tracks. The cross-track is placed about 2¾ inches higher than the long tracks, which obviates the rims of the long-track runners scraping on the long runners.

For passing from the longitudinal to the cross track, the entire crane is raised at the point of crossing by raising the

inner ends of the four bridges for the long-track runners, this lifting movement being continued until the swivel pieces can be laid in place. The crane is then lowered and set with the four double runners for transverse running resting on the transverse track.

The bascules are held at their inner extremities by draw bars suspended from screw spindles. The female screw of the spindles are driven by a bevel gearing fitted on a platform on the upper part of the crane portal. The motor is coupled to a worm drive, to both ends of the spindle of which bevel wheels are fitted. The dimensions of the crane are:

Lifting capacity, tons.....	10
Adjustable sweep, feet.....	23-49
Height of center of rollers above upper edge of rail, feet.....	44-71
Maximum lift, feet.....	96
Track of portal, feet.....	13
Distance of extreme limit of counterweight from the trunnions, feet.....	13.5
Speed of lift, feet per minute.....	65
Motor for lifting, horsepower.....	58
Motor for slewing and tipping, horsepower.....	9.7
Time for tipping from lowest to highest position of jib, minutes.....	2.06
Speed of travel, feet.....	49
Motor for running and raising the entire crane when shifting from one track to the other, horsepower.....	18.6

## Drilling Boiler Plates

Drilling holes in boiler shell plates is often an expensive operation, due to the time consumed in handling the material. With the object of reducing the drilling time to a minimum, the Van Dorn Electric Tool Co., Cleveland, recently devised the equipment shown in the accompanying illustration which is being used by the Puget Sound Machinery Depot, Seattle. Six of these machines are now in operation at this plant.

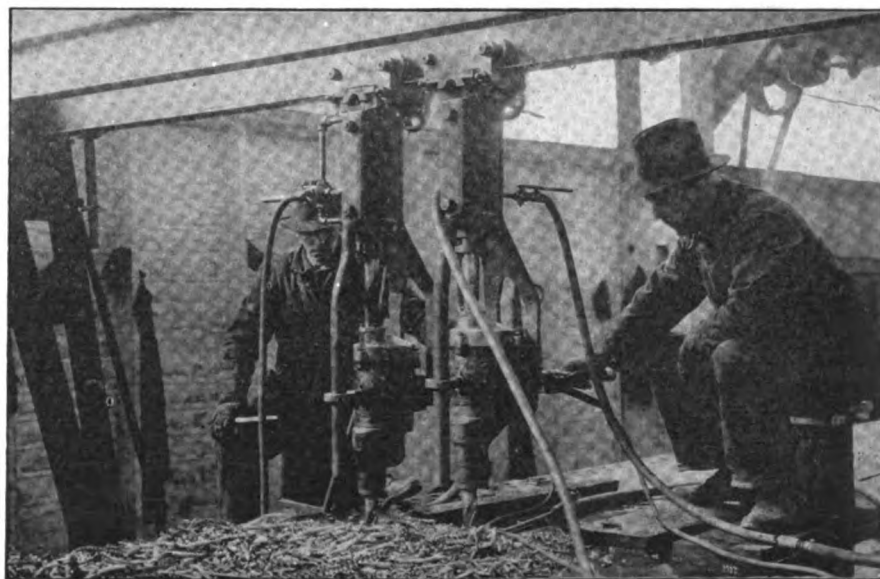
The device consists of an electric drill which is fed downward by means of a hydraulic cylinder, mounted directly above the drill. This device is controlled by a 4-way valve which exhausts underneath the plate to be drilled. Water is the medium used for operating and is supplied by the city mains at 85 pounds pressure to the square inch.

All the extra equipment necessary is a truss which is carried over the top of the span. The drilling units traverse this span by means of trolley wheels, so that several units can be used simultaneously on one span.

The material being drilled, as shown in the illustration, is boiler plate 1½ inches thick, three thicknesses being drilled at one operation giving a total thickness of 4½ inches. A high speed drill 1½ inches in diameter is used and it is said that an average of eight minutes per hole, including shifting the machine from one point to another, has been successfully accomplished.

## Makes World Record

Hog Island celebrated its first birthday Aug. 5, 1919, by launching its forty-seventh ship and establishing a world's record for ship production. In the year, 367,775 deadweight tons were



PORTABLE ELECTRIC DRILL EQUIPPED WITH HYDRAULIC FEED FOR DRILLING BOILER SHELL PLATES

launched, of which 36 vessels of a deadweight tonnage of 281,700 were delivered. The American International Shipbuilding Corp., operator of the Hog Island yard, states that heavy rains during July prevented a record of 50

ships with a deadweight tonnage of 391,250.

The yard's first ship, the *QUISTONCK*, sailed from Norfolk, Va., Jan. 2, 1919, with a cargo of coal, and in the next seven months, Hog Island vessels have

logged 225,000 miles and have carried upward of 400,000 tons of cargo to practically every important port in the world. The present contract for 110 A-type and 12 B-type vessels will be completed about Sept. 1, 1920.

## Modern Equipment to Burn Fuel Oil

**O**IL fuel as a bunkering medium recently has enlisted the attention of many shipbuilders in this country and abroad, who are investigating the merits of the system. Marine engineers have made rapid strides during the last few years in perfecting means for handling oil fuel in marine service. The accompanying illustrations show an oil fuel burning installation recently developed by J. Samuel White & Co., Ltd., East Cowes, Isle of Wight, builders of oil fuel installations, boilers, engines and vessels.

The installation illustrated consists of an oil fuel pump which keeps the oil under pressure, oil filters and strainers which prevent foreign mat-

ter from entering the burners and a heater which keeps the oil in a liquid state to facilitate the spraying action at the burner. A duplicate system is generally provided for changing should either of the single units fail to function. A fan is also provided in cases where the funnel is not sufficiently high to assure the perfect combustion of the fuel.

It is pointed out that these installations can be arranged to suit coal or wood fired boilers in use at present, or to suit watertube boilers burning oil exclusively or in conjunction with coal or wood fuel. A special case front is provided whereby the grate necessary for the change from oil to coal is quickly made. When using

oil only, the grate, a self-contained unit, can be readily removed.

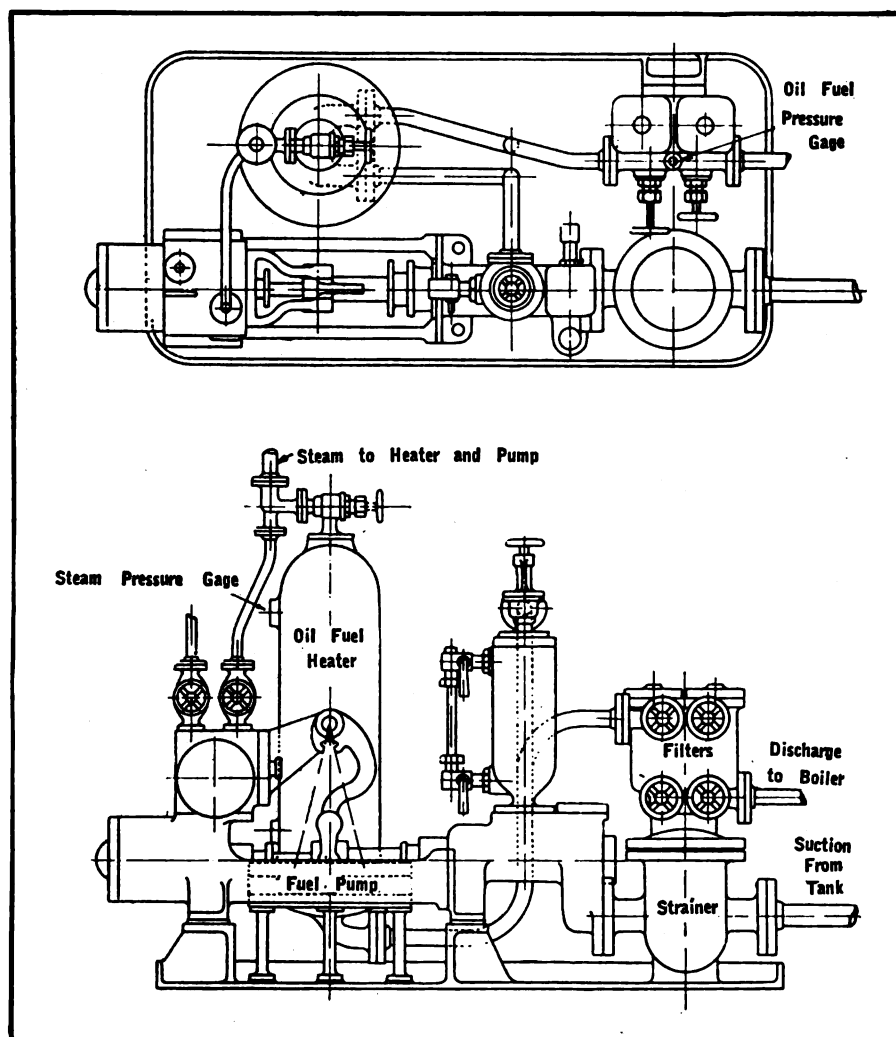
The apparatus is said to be easily manipulated. The White Co. gives the following instructions for lighting up with cold fuel:

"Before lighting the sprayers, the suction strainers and the delivery filters should be examined and cleaned if this is found to be necessary. One, two or three sprayers can be used in lighting, according to the requirements of the installation. It is pointed out that it is advisable to heat the cone beforehand. This is readily accomplished by inserting oily waste which is afterward ignited. Heating the cone prevents chilling of the spray which causes the oil to drip.

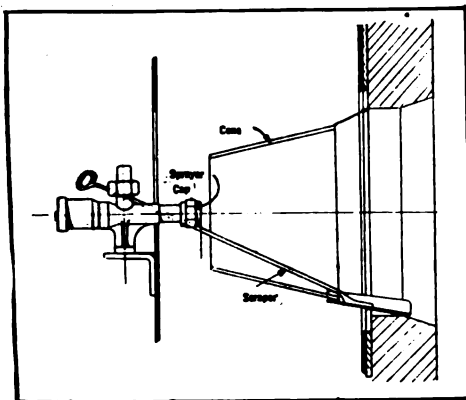
"After the cone is hot, the scraper is placed in position between the cone and the brickwork to prevent any oil dripping between the casings during the first few minutes. The sprayer is then placed in the cold position, closed, and the hand oil pump started. The oil is pumped until a pressure of approximately 200 pounds to the square inch is reached after which the air doors to the cone are opened.

"The master valve on the delivery side of the pump is now opened ready for starting. A lighted torch is inserted through the opening made for the sprayer, the torch being held on the stokehold side of the sprayer. Otherwise, it is pointed out, the cold spray might extinguish the torch. Then the sprayer is opened slowly in the cold position. If possible arrangements should be provided so that the fireman can see if the funnel is smoking or not. This is accomplished through glass deck plates or holes through the uptakes. He can then adjust the sprayer to eliminate the smoke. After a minute or so the torch can be withdrawn and two or three minutes later the scraper. The fireman, however, must pay attention to the sprayer and continue to adjust the cold-lighting arrangement as necessary. This is essential, due to the fact that the difference of expansion between the body and the spindle of the sprayer has a tendency to close it. This adjustment is necessary until sufficient steam has been generated to heat the oil to 100 degrees Fahr.

"As soon as a few pounds of steam



COMPACT SINGLE-UNIT ARRANGEMENT OF OIL FUEL INSTALLATION WITH HORIZONTAL PUMP



SECTION OF CONE AND SPRAYER USED FOR BURNING OIL IN MARINE INSTALLATIONS

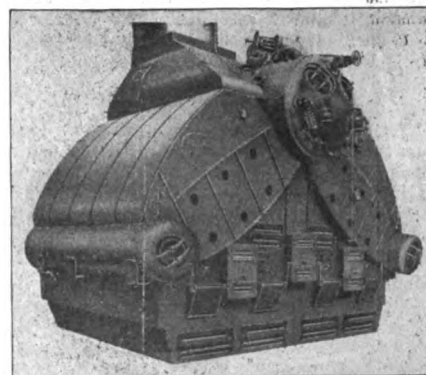
are shown by the gages, steam should be turned into the heaters. The sprayer is now turned from cold to hot oil position. To do this, the oil pressure should be reduced about 50 to 75 pounds pressure. With the master valve closed and the cold lighting arrangement changed over to the hot position, care should be exercised to see that the device is screwed hard against the stop.

"The oil pressure is now adjusted to suit the smoke. As soon as the

steam pressure is sufficient, the fan should be started. Then the oil pressure can be increased considerably which raises steam rapidly. The sprayers may now be added as required. The use of the torch is not necessary but care is necessary in adjusting the air pressure to suit the change of conditions. Too little air causes dense smoke, flame in the funnel and vibrations. Too much air, on the other hand, causes white smoke, or no smoke, and loss of economy through chilling and may blow out the flame in the furnace. An ideal condition is reached when a thin occasional brown-feather of smoke is in evidence."

The temperature of Texas oil should be raised to about 200 degrees Fahr. With other or heavier oils, the temperature should be sufficient to cause the oil to equal in viscosity Texas oil at 200 degrees Fahr. Lighter crude oils, such as Burmah, will work at a temperature of 150 degrees Fahr. and for heavy-grade paraffin or shale oil, the temperature can be further reduced.

The White company draws attention to the fact that oil is an efficient fuel



MARINE TYPE WATER TUBE BOILER ARRANGED TO BURN OIL IN CONJUNCTION WITH COAL

to use as it is high in calorific value, one pound of oil averaging about 19,500 British thermal units. It is also stated that oil fuel gives a constant and equal distribution of heat in the furnace, due to the fact that there are no fire doors to open. The company points out that dust, ashes and smoke are eliminated while there is no wear of grate bars and a further material saving is in evidence as the fire is quickly ignited or extinguished. This results in a saving of fuel while vessels are docked.

## Business News for the Marine Trade

The Bethlehem Shipbuilding Corp., Sparrows Point, Md., has been purchasing machinery for its yard.

The National Shipping Corp., New York, has increased its capital from \$1,000,000 to \$10,000,000.

An increase in capital from \$100,000 to \$1,000,000 has been made by the American Star Line, Inc., Brooklyn, N. Y.

The Perth Amboy Dry Dock Co., Perth Amboy, N. J., has been purchasing machinery for an extension to its ship repair facilities.

A cupola and mill building will be erected by the Thacher Propeller & Foundry Corp., Albany, N. Y., at an estimated cost of \$35,000.

Erection of an addition, 22 x 150 feet, is reported being contemplated by the Baltimore Dry Dock & Shipbuilding Co., Baltimore.

The Everlasting Valve Co., 49 Fisk street, Jersey City, N. J., recently increased its capital from \$600,000 to \$1,200,000.

The Phyllis Navigation Co., New York, recently was incorporated with \$800,000 capital, by A. J. Messing, D. Alexander and H. T. Williams, 29 Broadway.

Work has started on the erection of a machine shop at the plant of the Three Rivers Shipyard Co., Three Rivers, Que.

The bureau of yards and docks, Washington, has arranged for the erection of a new shipbuilding way at the Brooklyn navy yard.

Erection of extensions to its plant on a 40-acre tract, are being considered by the Union Shipbuilding Co., Fairfield, Md.

The Alberger Pump & Condenser Co., 140 Cedar street, New York, has awarded contracts for the erection of a plant addition.

The Penn Shipyards Corp., 419 Market street, Camden, N. J., recently was incorporated with \$4,000,000 capital.

The Merchant Shipbuilding Corp., Chester, Pa., is reported considering the erection of a new drydock

### New Offices

The Cosmopolitan Shipping Co., Inc., New York, recently opened an office in New Orleans in charge of Henry J. Campbell and S. M. Redman.

The Chicago Pneumatic Tool Co., Chicago, has moved its Cincinnati office from the Mercantile Library building to the Walsh building, Pearl and Vine streets. At the new office, a complete stock of pneumatic tools, electric tools, air compressors, oil engines, rock drills and repair parts will be maintained.

The Northwest Engineering Works, Green Bay, Wis., has opened a New York office, room 539, 149 Broadway, in charge of A. C. Rimmer.

The Foundation Co., New York, has established offices in France at 16 Rue de la Pepiniere, Paris. The French organization will operate under the name of Foundations, Constructions, Travaux Publics.

The Cunard Steamship Co., with which the Anchor line and the Anchor-Donaldson line are affiliated, has opened a branch office at Cleveland, to take care of its rapidly growing interests in the Great Lakes territory. This office is organized to handle both freight and passenger traffic and is in charge of J. L. Austin, formerly with the Cunard Steamship Co. at New York City.

The Chicago Pneumatic Tool Co., Chicago, will erect a 10-story office building at 6-8 East Forty-fourth street, New York, to which location the company's general offices will be moved from Chicago. The new building will be completed early in 1920.

on the Delaware river, with shop and ship construction facilities, to cost about \$2,000,000.

The Belen Quasada Motor Ship Co., New York, has been incorporated with \$200,000 capital, by Henry W. Pollock, Irving Berger and others.

An increase in capital from \$50,000 to \$5,000,000 recently was made by the Eldorado Steamship Co., New York.

Capitalized at \$60,000, the Atlantic Chain Corp., New York, recently was incorporated by H. Grill, M. Birnkrant and J. Stitch, 168 Madison street.

Work is expected to start shortly on the rebuilding of the plant of the Defoe Shipbuilding Co., Bay City, Mich., which was recently damaged by fire with a loss estimated at from \$35,000 to \$50,000.

A recent incorporation is that of the British-American Rotary Valve Co., Jersey City, N. J. The company which is capitalized at \$1,500,000, was incorporated by Edward Eriksen and others.

Among the recent incorporations is that of the Sterling Steamship Corp., which is capitalized at \$50,000. The incorporators are G. D. Frock, S. L. Mackle and M. C. Kelly, Wilmington, Del.

The Atlantic Adriatic Steamship Corp., capitalized at \$100,000, has been chartered by V. S. Bendix, R. L. Lake and L. Akerstrom, 561 West 179th street, New York.

Capitalized at \$25,000, the Federal Ship & Engine Co., Inc., New York, recently was incorporated by F. J. McHugh, J. M. Hannan and J. Harris, 1545 Broadway, New York.

A. M. Ender, Inc., Brooklyn, N. Y., shipbuilding and stevedoring, recently was incorporated with \$10,000 capital, by C. D. Strang, M. E. and A. M. Ender, 15 Scoville's Walk, Brooklyn, N. Y. F. R. Watts and B. E. Dalton, Portsmouth, Va., recently were named as the incorporators of the Southern Nautical Instrument & Repair Co., which was incorporated in the state of Virginia with



\$25,000 capital, to engage in the manufacture of nautical instruments and parts.

Capitalized at \$100,000, the Adelaide Navigating Co., New York, recently was incorporated by A. B. Lampke, S. D. Stein and H. V. Williams, 92 Broadway, New York.

The Wyman Steamship Corp., New York, recently was incorporated with \$50,000 capital, by V. B. Bendix, R. L. Lake and L. Akerstrom, 561 West 179th street, New York.

The Purdy Boat Co., Trenton, Mich., capitalized at \$75,000, has purchased a site and will build boats similar to those built at the company's yards at Miami, Fla.

According to a current report the International Shipbuilding Co., Pascagoula, Miss., is contemplating the doubling of its plant for the construction of steel ships.

The Bianca Shipping Corp., New York, shipbuilding and construction, recently was incorporated with \$10,000 capital, by W. D. Benson, 149 Broadway and others.

The Elk Steamship Co., New York, capitalized at \$100,000, has been chartered by C. E. and E. N. E. Scholls, J. H. Kleimann, 84 Downing street, and others.

Arrangements have been made by the East Coast Fisheries Co., New York, for the construction of two steel freighters at the Elizabeth, N. J., yards of the John W. Sullivan Co., shipbuilder, 827 East Ninth street, New York.

The Merchant Shipbuilding Corp., Harrison, Pa., has taken over by merger the Chester Shipbuilding Co., Ltd. For some time the former corporation has been the sole stockholder of the Chester company.

Immediate erection of a plant at Seneca Falls, N. Y., is planned by the Westcott Valve Co., Erie, Pa. The building will be erected at an estimated cost of \$25,000. Frank Cavenagh is vice president of the company.

The Todd Shipyards Corp., 15 Whitehall street, New York, has acquired the property formerly occupied by the Quintard Iron Works. The building is 206 x 270 feet, and will be used by the new owner for shipbuilding operations.

Preparations for the construction of ten 10,000-ton steel vessels for the United States shipping board, are being made at the plant of the Southwestern Shipbuilding Co., San Pedro, Los Angeles. The company recently was granted the contract.

The Sanderson & Porter wooden shipbuilding plant, Raymond, Wash., has completed its government contract and according to a report, will be offered for sale by the Emergency Fleet corporation. It has five ways with a capacity of 4000 tons.

A recent incorporation is that of the Georges Creek Steamship Co., 404 Lewis street, Union, N. J. The company has been capitalized at \$600,000 and will engage in a general steamship and transportation business.

The International Marine Construction Co., internal combustion engines, etc., recently was incorporated with \$5,000,000 capital, by Robert Spiro, New York, H. E. A. Rabbe, Jersey City, N. J., and W. A. Bischoff, Newark, N. J.

The city of St. Louis, municipal docks department, recently was reported in the market for cranes and other equipment for the city docks, provided for the government barge line operating out of St. Louis.

A recent incorporation is that of the Improved Propeller Corp., New York. The company, which is capitalized at \$150,000, was incorporated by J. Kunse, S. Ratajczm and W. Kedzierski, 42 Broadway, New York.

J. J. and D. F. McAllister and A. M. Chair, 103 Kent street, Brooklyn, N. Y., were named as incorporators of the Highlands Navigation Corp., New York, which was recently chartered with \$250,000 capital.

The Windward Island Line, Inc., Mobile, Ala., transportation, recently was incorporated with \$100,000 capital, by S. A. Le Blanc, T. K. Jackson and V. I. Hurlburt, to operate between Mobile and the Windward Islands.

The Baltimore Ship & Commerce Corp., steamship transportation, Baltimore, recently was incorporated

with \$500,000 capital, by Maurice Carlin, president, 503 American building, and Louis Bernstein, vice president and general manager.

The Portland Ship Ceiling Co. has filed an application with the board of harbor commissioners for the harbor of Portland, Me., for a permit to build and maintain a drydock in connection with its installation and repair plant.

The Filmar Metal Mfg. Co., 9 Peck slip, New York, recently was organized to do all kinds of sheet metal work for the marine trade. A. D. Morris is president of the company. The company is expected to occupy a plant of its own shortly.

A recent incorporation is that of the American-France Shipping & Dispatch Co. The firm, which is capitalized at \$50,000, was incorporated by G. L. Loft, D. L. Stafford and T. H. Shanton, 11 Broadway, New York.

The Norfolk & Hampton Roads Ship Repair & Dry Dock Corp., Norfolk, Va., is planning the construction of a ship repair plant to be built at an estimated cost of \$7,000,000. As far as known, purchases of machinery and equipment for the plant, as yet have not been made.

Charles Cory & Sons, 290 Hudson street, New York, builder of ships, engines, electrically operated apparatus, etc., is having plans prepared for the erection of a 6-story plant addition, 140 x 175 feet, to be built at an estimated cost of \$200,000. Russel G. Cory, 39 Cortlandt street, is engineer.

Operation of vessels of all kinds, will be engaged in by the Charles Development & Transportation Co., which recently was incorporated in Delaware by J. M. Decosta, F. V. Haas and F. L. Humphrey, all of New York. The company is capitalized at \$100,000.

Orders have been received at the plant of the Pusey & Jones Co., Gloucester, N. J., for the resumption of work on government contracts which were suspended shortly after the signing of the armistice, including the construction of a number of 12,500-ton vessels. William G. Cox is general manager.

The Charleston Dry Dock & Ship Repair Co., Charleston, S. C., recently incorporated with a capital stock of \$2,000,000, is planning the erection of a shipbuilding plant, to specialize in the construction of steel and wood cargo vessels. The plant will be located at Remleys Point. Robert N. Reid,

Winthrop H. Kellogg and Harold J. Gallagher are incorporators of the company.

The Bruce Dry Dock Co., Pensacola, Fla., is reported to have completed plans for the erection of a new drydock to be built at an estimated cost of \$450,000. The structure will have floating pen-tions, each 40 x 100 feet and 10 feet deep, and will be provided with shop buildings for construction and repair work. About 20 electrically operated centrifugal pumps will be installed.

Negotiations have been completed by the Morse Dry Dock & Repair Co., Fifty-sixth street, Brooklyn, N. Y., for the purchase of all the remaining waterfront property on the Staten Island shore of New York bay, between the Ft. Wadsworth reservation and property owned by New York city. The company is reported planning to build a new shipyard on the property at an estimated cost of \$1,000,000.

Frank A. Furst, Baltimore, and associates, are organizing a company in co-operation with the city for the establishment of a waterfront terminal to be built at an estimated cost of \$5,000,000. The project will include eight piers and 32 buildings, all to be equipped with handling and conveying machinery. F. W. Kesselbaum, engineer of the Baltimore Dry Dock & Ship Building Co., has developed the preliminary plans.

The Southern Shipyard Corp., Newport News, Va., which was recently incorporated with \$200,000 capital, has perfected its plans for its proposed shipbuilding plant. The initial works will comprise six buildings, including machine shop, pattern shop, woodworking plant, metal working plant and general construction building. A pier and marine railway will be constructed, and the plant will be equipped for building both steel and wooden vessels. C. A. Blaxon is president and general manager.

The new ship repair plant of the Fraser, Brace & Clarke Corp., New York, affiliated with Fraser, Brace & Co., 1328 Broadway, New York, at Clifton, Staten Island, N. Y., will consist of a 1-story machine shop, 60 x 100 feet; plate and angle shop, 50 x 100 feet; tinmith and carpenter shop, 50 x 100 feet; forge and pipe shop, 50 x 100 feet; paint shop, 20 x 25 feet; boiler plant, 35 x 45 feet, and miscellaneous structures. A drydock, 40 x 638 feet, will be constructed. Preliminary construction work has been started and it has been estimated the plant will be built at a total cost of \$1,000,000.

## New Trade Publications

**SOOT CLEANERS.**—The Vulcan Soot Cleaner Co., Du Bois, Pa., is issuing a bulletin which describes its device for removing soot from the tubes of horizontal, watertube boilers. The bulletin is illustrated. The working principle of the device is fully explained. An interesting cost analysis is included which will prove of interest to those who maintain and operate watertube boilers either in land or marine installations.

**GALLEY EQUIPMENT.**—The Bramhall, Deane Co., New York, recently issued a catalog devoted to its equipment for ships' galleys. The catalog is illustrated and full descriptions of each unit are included. The equipment includes ships' ranges of various types, ovens, steam tables, plate warmers, steamers, cookers, steam kettles, water boilers, coffee urns, egg boilers, food choppers, toasters, vegetable parers, potato mashers, dish washers, etc. It is pointed out that the company has been in business for over 50 years, during which time it has supplied equipment for Atlantic liners, lake and river vessels, battleships, transports, yachts, etc.

**OIL BURNING INSTALLATIONS.**—An attractive, illustrated catalog recently was issued by J. Samuel White & Co., Ltd., East Cowes, Isle of Wight, which describes oil burning installations for marine service. The device, which consists of means for pumping oil through burners at a pressure of approxi-

mately 180 pounds to the square inch, is thoroughly described. The catalog also includes explicit instructions for starting the fires with cold burners and hints for economical operation. The illustrations shown include typical installations, separate units, and line drawings showing how the apparatus functions. Views are given on British naval vessels equipped with the company's installations. Much valuable data on fuel oil are included together with the British admiralty fuel oil specifications.

**HOISTING MACHINERY.**—The Brown Hoisting Machinery Co., Cleveland, recently issued its general catalog for 1919. The book contains 262 pages. It is profusely illustrated and shows installations of the various equipment units manufactured by the company. The descriptions are concise. The equipment described includes machinery for handling ore, coal and other bulk materials; furnace hoists and tops; car dumpers; car pushers; bins; transfer cars; laries; harbor cranes; shipyard cranes; locomotive cranes grab buckets; hand cranes tramrail systems; electric hoists, etc. The book extensively covers ore, coal and stone handling machinery and also deals in a general way with the company's other smaller products. The first part of the book is devoted to a history of the Brown Hoisting Machinery Co. and the development of its various products for marine manufacturing and other installations.